U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
NATIONAL METEOROLOGICAL CENTER

OFFICE NOTE 124

NMC Format for Synoptic Reports

Automation Division Staff

JUNE 1976

This Office Note describes the format for surface synoptic reports in the NMC observational files. The basic format adheres to that described in Office Note #29 (September 1969, revised September 1973) with added provisions for accommodating additional parameters, primarily by the use of Category 8, and plain language by the use of Category 9. No significant changes in Categories 51 and 52 have been made.

Information contained in the NMC observational surface synoptic reports consists of combinations from the FORTRAN character set listed below:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
0 1 2 3 4 5 6 7 8 9 and

Character	Name of Character
	Blank (space)
-	Minus
*	Asterisk
/	Slash
$	Currency Symbol

A report is composed of two main parts. (1) the report identification group of fixed length (50 characters), and (2) the bookkeeping and observational data of variable length. Each report consists of 70 characters or more.

The information contained in the report identification group is given in APPENDIX S.1. The last parameter in this group contains the total number of ten-character words in the report and thus provides the linkage from one report to the next so that several reports may be blocked into a record. The report identification group is followed by the category/counter and observational data groups as needed. The observational data is formatted according to the categories described in APPENDIX S.2. The format of the category/counter groups is described in APPENDIX S.1. Where no data of a given category exist, the category/counter group as well as the data will be absent from the report. The final group in a report contains the ten characters "END REPORT". The number of characters in each category of data is evenly divisible by 10 and the character "X" is used as fill if necessary. Because of this and the length of the groups, the number of characters in the entire report (including the END REPORT) is also evenly divisible by 10.

A negative value is indicated by a minus (-) sign located in the leftmost position. A positive value is unsigned.

The requirement for revision is to expand the capability for formatting more parameters of surface reports. Even though there is some awkwardness in doing this with the Office Note 29 formatting scheme, it appears to be more expedient to implement operationally the changes this way than to completely revamp the formats of surface parameters.

Programming considerations that may be of interest are as follows:

1) No changes have been made in Category 51 data except that some quality characters have been assigned.

2) Water equivalent of snow and/or ice has replaced the previously reserved 7-character group in Category 52.

3) Except for Category 51, parameters from all reports are not handled identically because of the myriad of reporting procedures. For stations in blocks 70 through 74 precipitation, snow depth, and water equivalent appear in Category 52, and for other stations, these parameters appear as entries in Category 08.

4) The number of characters per report is variable and for some reports, especially blocks 70 - 74, also is greater than previously.

5) Programmers may continue to use unpacker W3AIØ2, but should allow for additional array space to hold an unpacked report.

6) Programmers desiring to use the Category 09 entries by means of W3AIØ2 should insure they are using a current version of that subroutine.

7) The current versions in W3LIB.LOAD of W3AIØ1, W3AIØ2, and W3AI17 handle the Category 09 format.

8) In order to attain flexibility for adding new report types and/or new categories of data, programs should be written so that these additions will not necessitate reprogramming. Of course, to utilize the additional data, programming would be needed. This can be done simply by providing checks to ascertain if the report type and/or category can be handled. If not, the report or category should be bypassed, pending changes needed to utilize the data if desired.

LIST OF APPENDICES

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APPENDIX S.3

APPENDIX S.4

Code Tables for Synoptic Reports:

WMO Code Tables

Code Tables 1*, 3, 4, 5, 8*, 9*, 10*, 11*, 12, 14, 16, 18, 19, 20, 21, 22, 22a-i, 23**, 24*, and WMO Code Tables 0663, 0700, 0739, 1000, 2100, 3600, and 4451 have been taken from Federal Meteorological Handbook No.2, Synoptic Code (Standards and Procedures for the Coding of Synoptic Reports), January 1, 1969.

*This table originally is an 11-character code (0,1,2,3,4,5,6,7,8,9,/). However, the code figure 10 has been used whenever "/" appeared in the original version.

** Code figure 98 has been substituted where 99 appeared in original version.

APPENDIX S.1

REPORT IDENTIFICATION (50 Characters)			
Character Number(s)	Parameter	Unit	Remarks
1- 5	Latitude*	Hundredths of degree	Negative in S. H.
6-10	West longitude*	Hundredths of degree	Values 00000 to 35999
11-16	Station identification	Alphanumeric	Left aligned, blank fill
17-20	Observation time*	Hundredths of hour	Values 0000 to 2399
21-24	Receipt time*	Hundredths of hour	Values 0000 to 2399
25-27	Reserved	-----	-----
28-30	Report type	Code figure from Table SM.1	Integer
31-35	Station elevation*	Meter	Negative if below sea level
36-37	Reserved*	-----	-----
38-40	Total length of report	10-character words	-----

* Whenever value is "missing" or not applicable, all characters for the parameter will contain "9".

CATEGORY/COUNTER GROUP (10 Characters)	
Character Number(s)	Parameter
41-42	Category code figure from APPENDIX S.3.
43-45	Relative position in report of the next category/counter group.*
46-47	Number of times data format for category is repeated (i.e., the number of entries)
48-50	Total number of characters in current category (fill characters not counted)

* The number of 10-character words in the report which precedes the next category/counter group plus 1.

APPENDIX S.2

Category 51 - Surface data (60 characters each entry)

No. of characters	Parameter	Unit
5	Sea-level pressure*	Tenth of millibar
5	Station pressure**	" " "
3	Wind direction	Degree
3	Wind speed	Knot
4	Air temperature	Tenth of degree C
3	Dewpoint depression	" " " "
4	Maximum temperature	" " " "
4	Minimum temperature	" " " "
1	Quality mark for sea-level pressure	Character from Table SM.51
1	Quality mark for station pressure	" " " "
1	Quality mark for wind	" " " "
1	Quality mark for air temperature	" " " "
1	Quality mark for depression	" " " "
3	Horizontal visibility	Code figure from Code Table 3
3	Present weather	Code figure from Code Table 4
2	Past weather	Code figure from Code Table 5
2	Fraction of the celestial dome covered by cloud (N)	Code figure from Code Table 1
2	Fraction of the celestial dome covered by all the C_L (or C_M) cloud present (N_h)	Code figure from Code Table 1
2	Clouds of genera Sc, St, Cu, Cb (C_L)	Code figure from Code Table 8
2	Height above ground of the base of the cloud (h)	Code figure from Code Table 9
2	Clouds of genera Ac, As, Ns (C_M)	Code figure from Code Table 10
2	Clouds of genera Ci, Cc, Cs (C_H)	Code figure from Code Table 11
1	Characteristic of pressure tendency during the 3 hours preceding the time of observation (a)**	Code figure from Code Table 12
3	Amount (magnitude) of the pressure tendency**	Tenth of millibar or Code figure from Table 14

*See note on following page.

**See note on following page.

***When the characteristic of pressure tendency is 9 and the amount of the pressure tendency is not 999, the tendency is a 24-hour pressure change code figure from Code Table 14.

* Reference Category 51, sea-level pressure (PPPPP), the following information describes the method for also accommodating the possible values encoded in the sea-level pressure entry (PPP) in the pressure-temperature group (PPPTT).

Characters	Level	Unit
PPPPP	sea-level	tenth of millibar
20PPP	reserved	
21PPP	1000 gpm	tenth of millibar
22PPP	2000 gpm	tenth of millibar
23PPP	500 gpm	tenth of millibar
24PPP	3000 gpm	tenth of millibar
25PPP	500 mb	geopotential meter (gpm)
26PPP	station	tenth of millibar
27PPP	700 mb	geopotential meter
28PPP	850 mb	geopotential meter
29PPP	unknown	(as reported)
99999	missing	----------

** Reference Category 51, station pressure ($P_oP_oP_oP_oP_o$), the following information describes the method for also accommodating the possible values encoded in the sea-level pressure entry (PPP) in the pressure-temperature group (PPPTT).

Characters	Level	Unit
$P_oP_oP_oP_oP_o$	station	tenth of millibar
20PPP	reserved	
21PPP	1000 gpm	tenth of millibar
22PPP	2000 gpm	tenth of millibar
23PPP	500 gpm	tenth of millibar
24PPP	3000 gpm	tenth of millibar
25PPP	500 mb	geopotential meter (gpm)
26PPP	station	tenth of millibar
27PPP	700 mb	geopotential meter
28PPP	850 mb	geopotential meter
29PPP	unknown	(as reported)
99999	missing	----------

Category 52 - Surface data (40 characters each entry)

No. of characters	Parameter	Unit
4	Amount of precipitation past 6 hours*	Hundredth of an inch
3	Total depth of snow on ground**	Inch
4	Total precipitation past 24 hours*	Hundredth of an inch
1	Time precipitation began or ended	Code figure from Code Table 16
2	Period of waves***	Second
2	Height of waves	Half (1-1/2 feet)
2	Direction from which swell waves are moving	Code figure from Code Table 23
2	Period of swell waves	Code figure from Table 24
2	Height of swell waves	Half yard (1-1/2 feet)
4	Sea surface temperature	Tenth of degree C
2	Special phenomena, general****	Code figure from Code Table 21
2	Special phenomena, detailed****	Code figure from Code Table 22
1	Ship's course	Code figure from Code Table 0700
2	Ship's average speed	Code figure from Code Table 4451
7	Water equivalent of snow and/or ice	Hundredth of an inch

* Trace is output as 9998.
** Trace is output as 998.
*** No estimate due to confused sea--output as 98.
**** Special phenomena, general, is missing (99) only if special phenomena, detailed, is missing (99).

Category 08 -- Additional Data (10 characters each entry)

No. of characters	Parameter	Unit
5	Data given by specification in Table SM.8a*	Variable
3	Form of data	Code figure from Table SM.8a
1	Indicator for specification	Character from Table SM.8b
1	Indicator for form	Character from Table SM.8c

Note--Entries will be ordered as encountered in report.

*Value set "missing" (99999) indicates transmitted as missing.

Category 09 -- Plain Language Data (12 characters each entry)

No. of characters	Parameter	Unit
1	Indicator of content of the plain language	Character from Table SM.9
11	Plain language data	Alphanumeric text

APPENDIX S.3

TABLE SM.1--REPORT TYPE (3 Characters)

Code Figure	Type of report
	Land station
511	By internationl index number
512	By call letters
513	By latitude-longtitude
	Ocean station
521	Fixed (Stationary OSV)
522	Moving ship with name
523	Moving ship without name
	Marine reporting station (MARS)
531	Fixed (Stationary)
532	Moving
	Monitoring (manual) bogus
551	By latitude-longtitude
	Buoy
561	Fixed (Stationary)
562	Moving

TABLE SM.8a - Code figures and specifications for Category 08

Code Figure	Specification
014	Station international index number. iiiii
020	Altimeter setting in 10ths of mb. . . . . .PPPPP
100	Optional group with 0 indicator 0XXXX
101	" " " 1 " 1XXXX
102	" " " 2 " 2XXXX
103	" " " 3 " 3XXXX
104	" " " 4 " 4XXXX
105	" " " 5 " 5XXXX
106	" " " 6 " 6XXXX
107	" " " 7 " 7XXXX
108	" " " 8 " 8XXXX
109	" " " 9 " 9XXXX
110	" " " / " 0XXXX
120	Ice data group. . . . . .c_2KD_ire

3/23/77

Definitions of symbols used in Table SM.8

iiiii 5-digit international index number.

PPPPP Pressure of altimeter setting in tenths of millibars.

XXXX 4-digit group associated with the indicator. Consult WMO Code manual for meanings (No. 306, Vol. I and II).

c_2 Kind of ice. See Code Table 0663.

K Effect on navigation. See Code Table 2100.

D_i Bearing of ice edge. See Code Table 0739.

r Distance to ice edge. See Code Table 3600.

e Orientation of ice edge. See Code Table 1000.

TABLE SM.8b - Indicator for specification

Character	Meaning
blank (space)	Not specified

TABLE SM.8c - Indicator for form

Character	Meaning	
blank (space)	Not specified	
	4-digits transmitted	4-digit output
0*	XXXX	XXXX
1*	XXX/	XXX9
2*	XX/X	XX9X
3*	XX//	XX99
4*	X/XX	X9XX
5*	X/X/	X9X9
6*	X//X	X99X
7*	X///	X999
8*	/XXX	9XXX
9*	/XX/	9XX9
A*	/X/X	9X9X
B*	/X//	9X99
C*	//XX	99XX
D*	//X/	99X9
E*	///X	999X
F*	////	9999

* Applies only to code figures 100 through 120.

TABLE SM.9 - Content of plain language data	
Character	Content
1	Remarks section from SA (hourly) report
2	Plain language "ICE" report...ICE AA.....A
3	"CITY" report....CITY T_xT_x T_nT_n TT $R_{24}R_{24}R_{24}R_{24}$
4	Miscellaneous undecoded "fragments"

Definition of symbols in TABLE SM.9

AA.....A - Characters as transmitted in report

T_xT_x - Code figures for maximum temperature (currently in degrees Fahrenheit)

T_nT_n - Code figures for minimum temperature (currently in degrees Fahrenheit)

TT - Code figures for current temperature (currently in degrees Fahrenheit)

$R_{24}R_{24}R_{24}R_{24}$ - Code figures for 24-hour precipitation (currently in hundredths of inches)

TABLE SM.51 - Markers for parameters	
Character	Meaning
blank (space)	Not specified
A	Ship wind measured using anemometer
H	Monitor requests retention of parameter
P	Monitor requests non-use of parameter

Sample Reports to Illustrate Formats

--Typical for land station from blocks 70-74.
--Typical for land station other than blocks 70-74.
--Typical "converted hourly" (SA).
--Typical moving ship (without name).

```
037621223872494 000000289995110000399017510120106010115101083600100110020011100 6
7     05801008060505040700702052017010400008000000829999999999999999999999999999
END REPORT

070950086701001 000000169995110000999015510120106010073999993600344-0900409999999
9     00508508090910101010201708015020207029910 7 391498109 2END REPORT

042200725 3CEF   120099999999512000759902351012010601009899999000000022701199999999
9     040010990303060210101007520170104000039999999999999999999999999999999999999
0801901010744910 14  0902302024 1 20003 WET 1RWY          XXXXXXEND REPORT

049500002 0SHIP  120099999999523999999901751012010601035299999040002007003999999999
9 A  0980020205000009000570025201701040999999999990000010502006799990009999999
END REPORT
```

Code Table 1

[WMO Code 2700]

Symbol N=Fraction of the Celestial Dome Covered by Cloud

Symbol N_h=Fraction of the Celestial Dome Covered by All the C_L (or C_M) Cloud present

Symbol N_s=Fraction of the Celestial Dome Covered by an Individual Cloud Layer or Mass

Code Figure	Fraction Covered in Tenths	Fraction Covered in Oktas
0	Zero	Zero
1	1 or less but not zero	1 Okta or less but not zero
2	2 and 3	2
3	4	3
4	5	4
5	6	5
6	7 and 8	6
7	9 or more, but not 10	7 or more, but not 8
8	10	8
9	Celestial dome obscured, or cloud amount can not be estimated.	
10	/ was encoded	

WMO Code Table 4451

Symbol v_s=Ship's Average Speed Made Good During the Three Hours Preceding the Time of Observation

Code Figure	Nautical Miles Per Hour	Kilometers Per Hour
0	0 nm/hr	0 km/hr.
1	1–5 nm/hr	1–10 km/hr.
2	6–10 nm/hr	11–19 km/hr.
3	11–15 nm/hr	20–28 km/hr.
4	16–20 nm/hr	29–37 km/hr.
5	21–25 nm/hr	38–47 km/hr.
6	26–30 nm/hr	48–56 km/hr.
7	31–35 nm/hr	57–65 km/hr.
8	36–40 nm/hr	66–75 km/hr.
9	Over 40 nm/hr	Over 75 km/hr.

Code Table 3

[WMO Code 4377]

Symbol VV=Horizontal Visibility

Code Figure	Statute Miles	Yards	Kilometers
00	Less than 1/16	Less than 110.	Less than 0.1.
01	1/16	110	0.1
02	1/8	220	0.2
03	3/16	330	0.3
04	1/4	440	0.4
05	5/16	550	0.5
06	3/8	660	0.6
07	7/16	770	0.7
08	1/2	880	0.8
09	9/16	990	0.9
10	5/8	1,100	1.0
11	11/16	1,210	1.1
12	3/4	1,320	1.2
13	13/16	1,430	1.3
14	7/8	1,540	1.4
15	15/16	1,650	1.5
16	1	1,760	1.6
17	1 1/16	1,870	1.7
18	1 1/8	1,980	1.8
19	1 3/16	2,090	1.9
20	1 1/4	2,200	2.0
21	1 5/16	2,310	2.1
22	1 3/8	2,420	2.2
23	1 7/16	2,530	2.3
24	1 1/2	2,640	2.4
25	1 9/16	2,750	2.5
26	1 5/8	2,860	2.6
27	1 11/16	2,970	2.7
28	1 3/4	3,080	2.8
29	1 13/16	3,190	2.9
30	1 7/8	3,300	3.0
31	1 15/16	3,410	3.1
32	2	3,520	3.2
33	2 1/16	3,630	3.3
34	2 1/8	3,740	3.4
35	2 3/16	3,850	3.5
36	2 1/4	3,960	3.6
37	2 5/16	4,070	3.7
38	2 5/8	4,180	3.8
39	2 7/16	4,290	3.9
40	2 1/2	4,400	4.0
41	2 9/16	4,510	4.1
42	2 5/8	4,620	4.2
43	2 11/16	4,730	4.3
44	2 3/4	4,840	4.4
45	2 13/16	4,950	4.5
46	2 7/8	5,060	4.6
47	2 15/16	5,170	4.7
48	3	5,280	4.8
49	3 1/16	5,390	4.9
50	3 1/8	5,500	5.0
51	Not specified.		
52	Not specified.		
53	Not specified.		

Code Table 3—Continued

Code Figure	Statute Miles	Yards	Kilometers
54	Not specified.		
55	Not specified.		
56	3¾	6,600	6
57	4⅜	7,700	7
58	5	etc	8
59	5⅝		9
60	6¼		10
61	6⅞		11
62	7½		12
63	8⅛		13
64	8¾		14
65	9⅜		15
66	10		16
67	10⅝		17
68	11¼		18
69	11⅞		19
70	12½		20
71	13⅛		21
72	13¾		22
73	14⅜		23
74	15		24
75	15⅝		25
76	16¼		26
77	16⅞		27
78	17½		28
79	18⅛		29
80	18¾		30
81	21⅞		35
82	25		40
83	28⅛		45
84	31¼		50
85	34⅜		55
86	37½		60
87	40⅝		65
88	43¾		70
89	Greater than 43¾.		Greater than 70.
90		Less than 55	Less than 50 m.
91		55	50 m.
92	⅛	220	200 m.
93	5/16	550	500 m.
94	⅝	1,100	1 km.
95	1¼	2,200	2
96	2½	4,400	4
97	6¼		10
98	12½		20
99	31¼ or more		50 or more.

NOTES:

(1) The values given are discrete values (i.e., not ranges). If the observed visibility is between two of the reportable distances as given in the table, the code figure of the lower reportable distance shall be reported.

(2) Only the code figures 00–89 shall be used in reports from land stations.

(3) In reporting visibility at sea the decade 90–99 shall be used.

Code Table 4

[WMO Code 4677]

Symbol ww=Present Weather

00—49: No precipitation at the station at the time of observation.

00—19: No precipitation, fog, ice fog (except for 11 and 12), duststorm, drifting or blowing snow at the station at the time of observation or, except for 09 and 17, during the preceding hour.

No meteors except photometeors:

- 00 Cloud development not observed or not observable.
- 01 Clouds generally dissolving or becoming less developed.
- 02 State of sky on the whole unchanged.
- 03 Clouds generally forming or developing.

(Characteristic change of the state of sky during past hour.)

Haze, dust, sand or smoke:

- 04 Visibility reduced by smoke, e.g., veldt or forest fires, industrial smoke or volcanic ashes.
- 05 Haze.
- 06 Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation.
- 07 Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen: or, in the case of ships, blowing spray at the station.
- 08 Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour, or at the time of observation, but no duststorm or sandstorm.
- 09 Duststorm or sandstorm within sight at the time of observation or at station during the preceding hour.

10 Light fog. (Vis. 1,100 yds. or more.)

11 Patches of shallow fog or ice fog at the station, whether on land or sea, not deeper than about 6 feet on land or 33 feet at sea. (Apparent vis. less than 1,100 yds.)

12 More or less continuous shallow fog or ice fog at the station, whether on land or sea, not deeper than about 6 feet on land or 33 feet at sea. (Apparent vis. less than 1,100 yds.)

13 Lightning visible, no thunder heard.

14 Precipitation within sight, but not reaching the ground or the surface of the sea.

15 Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e., estimated to be more than 3.1 miles) from the station.

16 Precipitation within sight, reaching the ground or the surface of the sea near to but not at the station.

17 Thunderstorm, but no precipitation at the time of observation.

18 Squalls at or within sight of the station during the preceding hour or at the time of observation.

19 Funnel cloud(s) (i.e., tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation.

Code Table 3—Continued

Code Figure	Statute Miles	Yards	Kilometers
54	Not specified.		
55	Not specified.		
56	3¾	6,600	6
57	4⅜	7,700	7
58	5	etc	8
59	5⅝		9
60	6¼		10
61	6⅞		11
62	7½		12
63	8⅛		13
64	8¾		14
65	9⅜		15
66	10		16
67	10⅝		17
68	11¼		18
69	11⅞		19
70	12½		20
71	13⅛		21
72	13¾		22
73	14⅜		23
74	15		24
75	15⅝		25
76	16¼		26
77	16⅞		27
78	17½		28
79	18⅛		29
80	18¾		30
81	21⅞		35
82	25		40
83	28⅛		45
84	31¼		50
85	34⅜		55
86	37½		60
87	40⅝		65
88	43¾		70
89	Greater than 43¾.		Greater than 70.
90		Less than 55	Less than 50 m.
91		55	50 m.
92	⅛	220	200 m.
93	5/16	550	500 m.
94	⅝	1,100	1 km.
95	1¼	2,200	2
96	2½	4,400	4
97	6¼		10
98	12½		20
99	31¼ or more		50 or more.

NOTES:

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- 00 Cloud development not observed or not observable.
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- 02 State of sky on the whole unchanged.
- 03 Clouds generally forming or developing.

} Characteristic change of the state of sky during past hour.

Haze, dust, sand or smoke:

- 04 Visibility reduced by smoke, e.g., veldt or forest fires, industrial smoke or volcanic ashes.
- 05 Haze.
- 06 Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation.
- 07 Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen: or, in the case of ships, blowing spray at the station.
- 08 Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour, or at the time of observation, but no duststorm or sandstorm.
- 09 Duststorm or sandstorm within sight at the time of observation or at station during the preceding hour.

- 10 Light fog.[1] (Vis. 1,100 yds. or more.)
- 11 Patches of
- 12 More or less continuous

} shallow fog or ice fog at the station, whether on land or sea, not deeper than about 6 feet on land or 33 feet at sea. (Apparent vis. less than 1,100 yds.)

- 13 Lightning visible, no thunder heard.
- 14 Precipitation within sight, but not reaching the ground or the surface of the sea.
- 15 Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e., estimated to be more than 3.1 miles) from the station.
- 16 Precipitation within sight, reaching the ground or the surface of the sea near to but not at the station.
- 17 Thunderstorm, but no precipitation at the time of observation.
- 18 Squalls at or within sight of the station during the preceding hour or at the time of observation.
- 19 Funnel cloud(s) (i.e., tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation.

Code Table 1

[WMO Code 2700]

Symbol **N**=Fraction of the Celestial Dome Covered by Cloud

Symbol N_h=Fraction of the Celestial Dome Covered by All the C_L (or C_M) Cloud present

Symbol N_s=Fraction of the Celestial Dome Covered by an Individual Cloud Layer or Mass

Code Figure	Fraction Covered in Tenths	Fraction Covered in Oktas
0	Zero	Zero
1	1 or less but not zero	1 Okta or less but not zero
2	2 and 3	2
3	4	3
4	5	4
5	6	5
6	7 and 8	6
7	9 or more, but not 10	7 or more, but not 8
8	10	8
9	Celestial dome obscured, or cloud amount can not be estimated.	

Code Table 2

[WMO Code 0877]

Symbol **dd**=Direction **from** Which Wind is Blowing

Code Figure	True Direction	Code Figure	True Direction
00	Calm	19	185°–194°
01	5°– 14°	20	195°–204°
02	15°– 24°	21	205°–214°
03	25°– 34°	22	215°–224°
04	35°– 44°	23	225°–234°
05	45°– 54°	24	235°–244°
06	55°– 64°	25	245°–254°
07	65°– 74°	26	255°–264°
08	75°– 84°	27	265°–274°
09	85°– 94°	28	275°–284°
10	95°–104°	29	285°–294°
11	105°–114°	30	295°–304°
12	115°–124°	31	305°–314°
13	125°–134°	32	315°–324°
14	135°–144°	33	325°–334°
15	145°–154°	34	335°–344°
16	155°–164°	35	345°–354°
17	165°–174°	36	355°– 4°
18	175°–184°		

NOTE.—Wind speeds from 100 to 199 knots, inclusive, are reported by adding 50 to the code figure for **dd** and coding the observed speed minus 100 for **ff**.

Code Table 3

[WMO Code 4377]

Symbol **VV**=Horizontal Visibility

Code Figure	Statute Miles	Yards	Kilometers
00	Less than 1/16	Less than 110.	Less than 0.1.
01	1/16	110	0.1
02	1/8	220	0.2
03	3/16	330	0.3
04	1/4	440	0.4
05	5/16	550	0.5
06	3/8	660	0.6
07	7/16	770	0.7
08	1/2	880	0.8
09	9/16	990	0.9
10	5/8	1,100	1.0
11	11/16	1,210	1.1
12	3/4	1,320	1.2
13	13/16	1,430	1.3
14	7/8	1,540	1.4
15	15/16	1,650	1.5
16	1	1,760	1.6
17	1 1/16	1,870	1.7
18	1 1/8	1,980	1.8
19	1 3/16	2,090	1.9
20	1 1/4	2,200	2.0
21	1 5/16	2,310	2.1
22	1 3/8	2,420	2.2
23	1 7/16	2,530	2.3
24	1 1/2	2,640	2.4
25	1 9/16	2,750	2.5
26	1 5/8	2,860	2.6
27	1 11/16	2,970	2.7
28	1 3/4	3,080	2.8
29	1 13/16	3,190	2.9
30	1 7/8	3,300	3.0
31	1 15/16	3,410	3.1
32	2	3,520	3.2
33	2 1/16	3,630	3.3
34	2 1/8	3,740	3.4
35	2 3/16	3,850	3.5
36	2 1/4	3,960	3.6
37	2 5/16	4,070	3.7
38	2 3/8	4,180	3.8
39	2 7/16	4,290	3.9
40	2 1/2	4,400	4.0
41	2 9/16	4,510	4.1
42	2 5/8	4,620	4.2
43	2 11/16	4,730	4.3
44	2 3/4	4,840	4.4
45	2 13/16	4,950	4.5
46	2 7/8	5,060	4.6
47	2 15/16	5,170	4.7
48	3	5,280	4.8
49	3 1/16	5,390	4.9
50	3 1/8	5,500	5.0
51	Not specified.		
52	Not specified.		
53	Not specified.		

Code Table 4—Continued

20—29: Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation.

20 Drizzle (not freezing) or snow grains
21 Rain (not freezing)
22 Snow
23 Rain and snow or ice pellets (type a)
24 Freezing drizzle or freezing rain
} Not falling as shower(s).

25 Shower(s) of rain.
26 Shower(s) of snow, or of rain and snow.
27 Shower(s) of hail,[3] or of rain and hail.[3]
28 Fog or ice fog. (Vis. less than 1,100 yds.).
29 Thunderstorm (with or without precipitation).

30—39: Duststorm, sandstorm, drifting or blowing snow.

30	Slight or moderate duststorm or sandstorm	Has decreased during the preceding hour.
31		No appreciable change during the preceding hour.
32		Has begun or has increased during the preceding hour.
33	Severe duststorm or sandstorm	Has decreased during the preceding hour.
34		No appreciable change during the preceding hour.
35		Has begun or has increased during the preceding hour.

36 Slight or moderate drifting snow, generally low. (Less than 6 ft.)
37 Heavy drifting snow, generally low. (Less than 6 ft.)
38 Slight or moderate blowing snow, generally high. (6 ft. or more)
39 Heavy blowing snow, generally high. (6 ft. or more)

40—49: Fog or ice fog at the time of observation. (Vis. less than 1,100 yds.)

40 Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer.
41 Fog or ice fog in patches
42 Fog or ice fog, sky discernible
43 Fog or ice fog, sky not discernible
} Has become thinner during the preceding hour.
44 Fog or ice fog, sky discernible
45 Fog or ice fog, sky not discernible
} No appreciable change during the preceding hour.

Code Table 4—Continued

46 Fog or ice fog, sky discernible
47 Fog or ice fog, sky not discernible
} Has begun or has become thicker during the preceding hour.

48 Fog, depositing rime, sky discernible.
49 Fog, depositing rime, sky not discernible.

50—99: Precipitation at the station at the time of observation

50—59: Drizzle.

50 Drizzle, not freezing, intermittent
51 Drizzle, not freezing, continuous
} Slight at time of observation.
52 Drizzle, not freezing, intermittent
53 Drizzle, not freezing, continuous
} Moderate at time of observation.
54 Drizzle, not freezing, intermittent
55 Drizzle, not freezing, continuous
} Heavy (dense) at time of observation.
56 Drizzle, freezing, slight.
57 Drizzle, freezing, moderate or heavy (dense).
58 Drizzle and rain, slight.
59 Drizzle and rain, moderate or heavy.

60—69: Rain.

60 Rain, not freezing, intermittent
61 Rain, not freezing, continuous
} Slight at time of observation.
62 Rain, not freezing, intermittent
63 Rain, not freezing, continuous
} Moderate at time of observation.
64 Rain, not freezing, intermittent
65 Rain, not freezing, continuous
} Heavy at time of observation.
66 Rain, freezing, slight.
67 Rain, freezing, moderate or heavy.
68 Rain or drizzle and snow, slight.
69 Rain or drizzle and snow, moderate or heavy.

70—79: Solid precipitation not in showers

70 Intermittent fall of snow flakes
71 Continuous fall of snow flakes
} Slight at time of observation.
72 Intermittent fall of snow flakes
73 Continuous fall of snow flakes
} Moderate at time of observation.
74 Intermittent fall of snow flakes
75 Continuous fall of snow flakes
} Heavy at time of observation.
76 Ice prisms (with or without fog).
77 Snow grains (with or without fog).

Code Table 4—Continued

78 Isolated starlike snow crystals (with or without fog).
79 Ice pellets (type a) (sleet, U.S. definition).

80—99: Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight.	
81	Rain shower(s), moderate or heavy.	
82	Rain shower(s), violent.	
83	Shower(s) of rain and snow mixed, slight.	
84	Shower(s) of rain and snow mixed, moderate or heavy.	
85	Snow shower(s), slight.	
86	Snow shower(s), moderate or heavy.	
87	Shower(s) of snow pellets, or ice pellets (type b) with or without rain or rain and snow mixed.	Slight.
88		Moderate or heavy.
89	Shower(s) of hail,[2] with or without rain or rain and snow mixed, not associated with thunder.	Slight.
90		Moderate or heavy.
91	Slight rain at time of observation.	Thunderstorm during the preceding hour but not at time of observation.
92	Moderate or heavy rain at time of observation.	
93	Slight snow or rain and snow mixed or hail [3] at time of observation.	
94	Moderate or heavy snow, or rain and snow mixed or hail [3] at time of observation.	
95	Thunderstorm, slight or moderate, without hail [3] but with rain and/or snow at time of observation.	Thunderstorm at time of observation.
96	Thunderstorm, slight or moderate, with hail [3] at time of observation.	
97	Thunderstorm, heavy, without hail, [3] but with rain and/or snow at time of observation.	
98	Thunderstorm combined with duststorm or sandstorm at time of observation.	Thunderstorm at time of observation.
99	Thunderstorm, heavy with hail [3] at time of observation.	

[1] The U.S. term, "light fog" is synonymous with the European term "mist."
[2] Refers to "hail" only.
[3] Refers to snow pellets, ice pellets (type b), and hail.

NOTE.—With respect to precipitation, "at the station" means "at the point where the observation is normally taken."

Code Table 5

[WMO Code 4500]

Symbol W=Past Weather

Code Figure	Weather
0	Cloud covering ½ or less of the celestial dome throughout the appropriate period.
1	Cloud covering more than ½ of the celestial dome during part of the appropriate period and covering ½ or less during part of the period.
2	Cloud covering more than ½ of the celestial dome throughout the appropriate period.
3	Sandstorm, duststorm, or blowing snow.
4	Fog, ice fog, thick haze or thick smoke.
5	Drizzle.
6	Rain.
7	Snow, rain and snow mixed, or ice pellets.
8	Shower(s).
9	Thunderstorm, with or without precipitation.

NOTE.—The term "ice pellets" is synonymous with the U.S. term "sleet."

Code Table 6

Symbol PPP=Atmospheric Pressure Reduced to Sea Level

Symbol $P_oP_oP_oP_o$=Station Pressure

(One inch=33.86389 Millibars)
(One millibar=0.02952998 inch)

in.	mb.	in.	mb.	in.	mb.
27.50	931.3	27.68	937.4	27.86	943.4
27.51	931.6	27.69	937.7	27.87	943.8
27.52	931.9	27.70	938.0	27.88	944.1
27.53	932.3	27.71	938.4	27.89	944.5
27.54	932.6	27.72	938.7	27.90	944.8
27.55	933.0	27.73	939.0	27.91	945.1
27.56	933.3	27.74	939.4	27.92	945.5
27.57	933.6	27.75	939.7	27.93	945.8
27.58	934.0	27.76	940.1	27.94	946.2
27.59	934.3	27.77	940.4	27.95	946.5
27.60	934.6	27.78	940.7	27.96	946.8
27.61	935.0	27.79	941.1	27.97	947.2
27.62	935.3	27.80	941.4	27.98	947.5
27.63	935.7	27.81	941.8	27.99	947.9
27.64	936.0	27.82	942.1	28.00	948.2
27.65	936.3	27.83	942.4	28.01	948.5
27.66	936.7	27.84	942.8	28.02	948.9
27.67	937.0	27.85	943.1	28.03	949.2

Code Table 4—Continued

78 Isolated starlike snow crystals (with or without fog).

79 Ice pellets (type a) (sleet, U.S. definition).

80—99: Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight.	
81	Rain shower(s), moderate or heavy.	
82	Rain shower(s), violent.	
83	Shower(s) of rain and snow mixed, slight.	
84	Shower(s) of rain and snow mixed, moderate or heavy.	
85	Snow shower(s), slight.	
86	Snow shower(s), moderate or heavy.	
87	Shower(s) of snow pellets, or ice pellets (type b) with or without rain or rain and snow mixed.	Slight.
88		Moderate or heavy.
89	Shower(s) of hail,[2] with or without rain or rain and snow mixed, not associated with thunder.	Slight.
90		Moderate or heavy.
91	Slight rain at time of observation.	Thunderstorm during the preceding hour but not at time of observation.
92	Moderate or heavy rain at time of observation.	
93	Slight snow or rain and snow mixed or hail [3] at time of observation.	
94	Moderate or heavy snow, or rain and snow mixed or hail [3] at time of observation.	
95	Thunderstorm, slight or moderate, without hail [3] but with rain and/or snow at time of observation.	Thunderstorm at time of observation.
96	Thunderstorm, slight or moderate, with hail [3] at time of observation.	
97	Thunderstorm, heavy, without hail, [3] but with rain and/or snow at time of observation.	
98	Thunderstorm combined with duststorm or sandstorm at time of observation.	Thunderstorm at time of observation.
99	Thunderstorm, heavy with hail [3] at time of observation.	

[1] The U.S. term, "light fog" is synonymous with the European term "mist."

[2] Refers to "hail" only.

[3] Refers to snow pellets, ice pellets (type b), and hail.

NOTE.—With respect to precipitation, "at the station" means "at the point where the observation is normally taken."

Code Table 5

[WMO Code 4500]

Symbol W=Past Weather

Code Figure	Weather
0	Cloud covering ½ or less of the celestial dome throughout the appropriate period.
1	Cloud covering more than ½ of the celestial dome during part of the appropriate period and covering ½ or less during part of the period.
2	Cloud covering more than ½ of the celestial dome throughout the appropriate period.
3	Sandstorm, duststorm, or blowing snow.
4	Fog, ice fog, thick haze or thick smoke.
5	Drizzle.
6	Rain.
7	Snow, rain and snow mixed, or ice pellets.
8	Shower(s).
9	Thunderstorm, with or without precipitation.

NOTE.—The term "ice pellets" is synonymous with the U.S. term "sleet."

Code Table 8

[WMO Code 0513]

Symbol C_L=Clouds of Genera Sc, St, Cu, Cb

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_L clouds	No Stratocumulus, Stratus, Cumulus, or Cumulonimbus.
1	Cumulus humilis or Cumulus fractus other than of bad weather,[1] or both.	Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus other than of bad weather,[1] or both.
2	Cumulus mediocris or congestus, with or without Cumulus of species fractus or humilis, or Stratocumulus, all	Cumulus of moderate or strong vertical extent generally with protuberances in the form of domes or towers, either accompanied or not by

Code Table 8—Continued

[WMO Code 0513]

Code Figure	Technical Specifications	Nontechnical Specifications
2	having their bases at the same level.	other Cumulus or by Stratocumulus; all having their bases at the same level.
3	Cumulonimbus calvus, with or without Cumulus, Stratocumulus or Stratus.	Cumulonimbus, the summits of which, at least partially, lack sharp outlines, but are neither clearly fibrous (cirriform) nor in the form of an anvil; Cumulus, Stratocumulus or Stratus may also be present.
4	Stratocumulus cumulogenitus.	Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present.
5	Stratocumulus other than Stratocumulus cumulogenitus.	Stratocumulus not resulting from the spreading out of Cumulus.
6	Stratus nebulosus or Stratus fractus other than of bad weather,[1] or both.	Stratus in a more or less continuous sheet or layer, or in ragged shreds, or both, but no Stratus fractus of bad weather.[1]
7	Stratus fractus or Cumulus fractus of bad weather,[1] or both (pannus), usually below Altostratus or Nimbostratus.	Stratus fractus of bad weather [1] or Cumulus fractus of bad weather,[1] or both (pannus), usually below Altostratus or Nimbostratus.
8	Cumulus and Stratocumulus other than Stratocumulus cumulogenitus, with bases at different levels.	Cumulus and Stratocumulus other than that formed from the spreading out of Cumulus; the base of the Cumulus is at a different level from that of the Stratocumulus.

Code Table 6—Continued

in.	mb.	in.	mb.	in.	mb.
28. 04	949. 5	28. 58	967. 8	29. 12	986. 1
28. 05	949. 9	28. 59	968. 2	29. 13	986. 5
28. 06	950. 2	28. 60	968. 5	29. 14	986. 8
28. 07	950. 6	28. 61	968. 8	29. 15	987. 1
28. 08	950. 9	28. 62	969. 2	29. 16	987. 5
28. 09	951. 2	28. 63	969. 5	29. 17	987. 8
28. 10	951. 6	28. 64	969. 9	29. 18	988. 1
28. 11	951. 9	28. 65	970. 2	29. 19	988. 5
28. 12	952. 3	28. 66	970. 5	29. 20	988. 8
28. 13	952. 6	28. 67	970. 9	29. 21	989. 2
28. 14	952. 9	28. 68	971. 2	29. 22	989. 5
28. 15	953. 3	28. 69	971. 6	29. 23	989. 8
28. 16	953. 6	28. 70	971. 9	29. 24	990. 2
28. 17	953. 9	28. 71	972. 2	29. 25	990. 5
28. 18	954. 3	28. 72	972. 6	29. 26	990. 9
28. 19	954. 6	28. 73	972. 9	29. 27	991. 2
28. 20	955. 0	28. 74	973. 2	29. 28	991. 5
28. 21	955. 3	28. 75	973. 6	29. 29	991. 9
28. 22	955. 6	28. 76	973. 9	29. 30	992. 2
28. 23	956. 0	28. 77	974. 3	29. 31	992. 6
28. 24	956. 3	28. 78	974. 6	29. 32	992. 9
28. 25	956. 7	28. 79	974. 9	29. 33	993. 2
28. 26	957. 0	28. 80	975. 3	29. 34	993. 6
28. 27	957. 3	28. 81	975. 6	29. 35	993. 9
28. 28	957. 7	28. 82	976. 0	29. 36	994. 2
28. 29	958. 0	28. 83	976. 3	29. 37	994. 6
28. 30	958. 3	28. 84	976. 6	29. 38	994. 9
28. 31	958. 7	28. 85	977. 0	29. 39	995. 3
28. 32	959. 0	28. 86	977. 3	29. 40	995. 6
28. 33	959. 4	28. 87	977. 7	29. 41	995. 9
28. 34	959. 7	28. 88	978. 0	29. 42	996. 3
28. 35	960. 0	28. 89	978. 3	29. 43	996. 6
28. 36	960. 4	28. 90	978. 7	29. 44	997. 0
28. 37	960. 7	28. 91	979. 0	29. 45	997. 3
28. 38	961. 1	28. 92	979. 3	29. 46	997. 6
28. 39	961. 4	28. 93	979. 7	29. 47	998. 0
28. 40	961. 7	28. 94	980. 0	29. 48	998. 3
28. 41	962. 1	28. 95	980. 4	29. 49	998. 6
28. 42	962. 4	28. 96	980. 7	29. 50	999. 0
28. 43	962. 8	28. 97	981. 0	29. 51	999. 3
28. 44	963. 1	28. 98	981. 4	29. 52	999. 7
28. 45	963. 4	28. 99	981. 7	29. 53	1, 000. 0
28. 46	963. 8	29. 00	982. 1	29. 54	1, 000. 3
28. 47	964. 1	29. 01	982. 4	29. 55	1, 000. 7
28. 48	964. 4	29. 02	982. 7	29. 56	1, 001. 0
28. 49	964. 8	29. 03	983. 1	29. 57	1, 001. 4
28. 50	965. 1	29. 04	983. 4	29. 58	1, 001. 7
28. 51	965. 5	29. 05	983. 7	29. 59	1, 002. 0
28. 52	965. 8	29. 06	984. 1	29. 60	1, 002. 4
28. 53	966. 1	29. 07	984. 4	29. 61	1, 002. 7
28. 54	966. 5	29. 08	984. 8	29. 62	1, 003. 0
28. 55	966. 8	29. 09	985. 1	29. 63	1, 003. 4
28. 56	967. 2	29. 10	985. 4	29. 64	1, 003. 7
28. 57	967. 5	29. 11	985. 8	29. 65	1, 004. 1

Code Table 6—Continued

in.	mb.	in.	mb.	in.	mb.
29. 66	1, 004. 4	30. 20	1, 022. 7	30. 74	1, 041. 0
29. 67	1, 004. 7	30. 21	1, 023. 0	30. 75	1, 041. 3
29. 68	1, 005. 1	30. 22	1, 023. 4	30. 76	1, 041. 7
29. 69	1, 005. 4	30. 23	1, 023. 7	30. 77	1, 042. 0
29. 70	1, 005. 8	30. 24	1, 024. 0	30. 78	1, 042. 3
29. 71	1, 006. 1	30. 25	1, 024. 4	30. 79	1, 042. 7
29. 72	1, 006. 4	30. 26	1, 024. 7	30. 80	1, 043. 0
29. 73	1, 006. 8	30. 27	1, 025. 1	30. 81	1, 043. 3
29. 74	1, 007. 1	30. 28	1, 025. 4	30. 82	1, 043. 7
29. 75	1, 007. 5	30. 29	1, 025. 7	30. 83	1, 044. 0
29. 76	1, 007. 8	30. 30	1, 026. 1	30. 84	1, 044. 4
29. 77	1, 008. 1	30. 31	1, 026. 4	30. 85	1, 044. 7
29. 78	1, 008. 5	30. 32	1, 026. 8	30. 86	1, 045. 0
29. 79	1, 008. 8	30. 33	1, 027. 1	30. 87	1, 045. 4
29. 80	1, 009. 1	30. 34	1, 027. 4	30. 88	1, 045. 7
29. 81	1, 009. 5	30. 35	1, 027. 8	30. 89	1, 046. 1
29. 82	1, 009. 8	30. 36	1, 028. 1	30. 90	1, 046. 4
29. 83	1, 010. 2	30. 37	1, 028. 4	30. 91	1, 046. 7
29. 84	1, 010. 5	30. 38	1, 028. 8	30. 92	1, 047. 1
29. 85	1, 010. 8	30. 39	1, 029. 1	30. 93	1, 047. 4
29. 86	1, 011. 2	30. 40	1, 029. 5	30. 94	1, 047. 7
29. 87	1, 011. 5	30. 41	1, 029. 8	30. 95	1, 048. 1
29. 88	1, 011. 9	30. 42	1, 030. 1	30. 96	1, 048. 4
29. 89	1, 012. 2	30. 43	1, 030. 5	30. 97	1, 048. 8
29. 90	1, 012. 5	30. 44	1, 030. 8	30. 98	1, 049. 1
29. 91	1, 012. 9	30. 45	1, 031. 2	30. 99	1, 049. 4
29. 92	1, 013. 2	30. 46	1, 031. 5	31. 00	1, 049.
29. 93	1, 013. 5	30. 47	1, 031. 8	31. 01	1, 050.
29. 94	1, 013. 9	30. 48	1, 032. 2	31. 02	1, 050. 5
29. 95	1, 014. 2	30. 49	1, 032. 5	31. 03	1, 050. 8
29. 96	1, 014. 6	30. 50	1, 032. 8	31. 04	1, 051. 1
29. 97	1, 014. 9	30. 51	1, 033. 2	31. 05	1, 051. 5
29. 98	1, 015. 2	30. 52	1, 033. 5	31. 06	1, 051. 8
29. 99	1, 015. 6	30. 53	1, 033. 9	31. 07	1, 052. 2
30. 00	1, 015. 9	30. 54	1, 034. 2	31. 08	1, 052. 5
30. 01	1, 016. 3	30. 55	1, 034. 5	31. 09	1, 052. 8
30. 02	1, 016. 6	30. 56	1, 034. 9	31. 10	1, 053. 2
30. 03	1, 016. 9	30. 57	1, 035. 2	31. 11	1, 053. 5
30. 04	1, 017. 3	30. 58	1, 035. 6	31. 12	1, 053. 8
30. 05	1, 017. 6	30. 59	1, 035. 9	31. 13	1, 054. 2
30. 06	1, 017. 9	30. 60	1, 036. 2	31. 14	1, 054. 5
30. 07	1, 018. 3	30. 61	1, 036. 6	31. 15	1, 054. 9
30. 08	1, 018. 6	30. 62	1, 036. 9	31. 16	1, 055. 2
30. 09	1, 019. 0	30. 63	1, 037. 3	31. 17	1, 055. 5
30. 10	1, 019. 3	30. 64	1, 037. 6	31. 18	1, 055. 9
30. 11	1, 019. 6	30. 65	1, 037. 9	31. 19	1, 056. 2
30. 12	1, 020. 0	30. 66	1, 038. 3	31. 20	1, 056. 6
30. 13	1, 020. 3	30. 67	1, 038. 6	31. 21	1, 056. 9
30. 14	1, 020. 7	30. 68	1, 038. 9	31. 22	1, 057. 2
30. 15	1, 021. 0	30. 69	1, 039. 3	31. 23	1, 057. 6
30. 16	1, 021. 3	30. 70	1, 039. 6	31. 24	1, 057. 9
30. 17	1, 021. 7	30. 71	1, 040. 0	31. 25	1, 058. 2
30. 18	1, 022. 0	30. 72	1, 040. 3	31. 26	1, 058. 6
30. 19	1, 022. 4	30. 73	1, 040. 6	31. 27	1, 058. 9

Code Table 8—Continued

Code Figure	Technical Specifications	Nontechnical Specifications
9	Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus, Cumulus, Stratocumulus, Stratus or pannus.	Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil, either accompanied or not by Cumulonimbus without anvil or fibrous upper part, by Cumulus, Stratocumulus, Stratus or pannus.
10	C_L clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.	Stratocumulus, Stratus, Cumulus, or Cumulonimbus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.

[1] "Bad weather" denotes the conditions which generally exist during precipitation and a short time before and after.

Code Table 9

[WMO Code 1600]

Symbol h=Height above Ground of the Base of the Cloud

Code Figure	Height in Feet	Height in Meters
0	0– 149	0– 49
1	150– 299	50– 99
2	300– 599	100– 199
3	600– 999	200– 299
4	1, 000–1, 999	300– 599
5	2, 000–3, 499	600– 999
6	3, 500–4, 999	1, 000–1, 499
7	5, 000–6, 499	1, 500–1, 999
8	6, 500–7, 999	2, 000–2, 499
9	8, 000 or higher, or no clouds.	2, 500 or higher, or no clouds.
10	/ was encoded	

NOTES: (1) The heights (in feet) given in this code table approximately correspond to those given in WMO Code 1600 and to those given in the ninth decade (i.e., code figures 90–99) of WMO Code 1577.

(2) The term "height above ground" is considered as being the height above the official aerodrome elevation or above station level at a non-aerodrome station.

Code Table 10

[WMO Code 0515]

Symbol C_M=Clouds of Genera Ac, As, Ns

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_M clouds	No Altocumulus, Altostratus or Nimbostratus.
1	Altostratus translucidus.	Altostratus, the greater part of which is semitransparent; through this part the sun or moon may be weakly visible as through ground glass.
2	Altostratus opacus or Nimbostratus.	Altostratus, the greate part of which is sufficiently dense to hide the sun or moon, or Nimbostratus.
3	Altocumulus translucidus at a single level.	Altocumulus, the greater part of which is semitransparent, the various elements of the cloud change only slowly and are all at a single level.
4	Patches (often lenticular) of Altocumulus translucidus, continually changing and occuring at one or more levels.	Patche (often in the form of almonds or fishes) of Altocumulus, the greater part of which is semitransparent; the clouds occur at one or more levels and the elements are continually changing in appearance.
5	Altocumulus translucidus in bands, or one or more layer of Altocumulus translucidus or opacus, progressively invading the sky; these Altocumulus clouds generally thicken as a whole.	Semitransparent Altocumulus in bands, or Altocumulus in one or more fairly continuous layers (semitransparent or opaque), progressively invading the sky; these Altocumulus cloud generally thicken as a whole.

Code Table 10—Continued

Code Figure	Technical Specifications	Nontechnical Specifications
6	Altocumulus cumulogenitus (or cumulonimbogenitus).	Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus).
7	Altocumulus translucidus or opacus in two or more layers, or Altocumulus opacus in a single layer not progressively invading the sky, or Altocumulus with Altostratus or Nimbostratus.	Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus, not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus.
8	Altocumulus castellanus or floccus.	Altocumulus with sproutings in the form of small towers or battlements, or Altocumulus having the appearance of cumuliform tufts.
9	Altocumulus of a chaotic sky, generally at several levels.	Altocumulus of a chaotic sky, generally at several levels.
/	C_M clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or because of a continuous layer of lower clouds.	Altocumulus, Altostratus and Nimbostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

Code Table 11

[WMO Code 0509]

Symbol C_H=Clouds of Genera Ci, Cc, Cs

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_H clouds	No Cirrus, Cirrocumulus, or Cirrostratus.
1	Cirrus fibratus, sometimes uncinus, not progressively invading the sky.	Cirrus in the form of filaments, strands or hooks, not progressively invading the sky.
2	Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus.	Dense Cirrus in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts.
3	Cirrus spissatus cumulonimbogenitus.	Dense Cirrus, often in the form of an anvil, being the remains of the upper parts of Cumulonimbus.
4	Cirrus uncinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole.	Cirrus in the form of hooks or of filaments or both, progressively invading the sky; they generally become denser as a whole.
5	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not	Cirrus (often in bands converging towards one or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally

Code Table 10—Continued

Code Figure	Technical Specifications	Nontechnical Specifications
6	Altocumulus cumulogenitus (or cumulonimbogenitus).	Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus).
7	Altocumulus translucidus or opacus in two or more layers, or Altocumulus opacus in a single layer not progressively invading the sky, or Altocumulus with Altostratus or Nimbostratus.	Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus, not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus.
8	Altocumulus castellanus or floccus.	Altocumulus with sproutings in the form of small towers or battlements, or Altocumulus having the appearance of cumuliform tufts.
9	Altocumulus of a chaotic sky, generally at several levels.	Altocumulus of a chaotic sky, generally at several levels.
10	C_M clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or because of a continuous layer of lower clouds.	Altocumulus, Altostratus and Nimbostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

Code Table 11

[WMO Code 0509]

Symbol C_H=Clouds of Genera Ci, Cc, Cs

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_H clouds---	No Cirrus, Cirrocumulus, or Cirrostratus.
1	Cirrus fibratus, sometimes uncinus, not progressively invading the sky.	Cirrus in the form of filaments, strands or hooks, not progressively invading the sky.
2	Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus.	Dense Cirrus in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts.
3	Cirrus spissatus cumulonimbogenitus.	Dense Cirrus, often in the form of an anvil, being the remains of the upper parts of Cumulonimbus.
4	Cirrus uncinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole.	Cirrus in the form of hooks or of filaments or both, progressively invading the sky; they generally become denser as a whole.
5	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not	Cirrus (often in bands converging towards one or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally

Code Table 8—Continued

Code Figure	Technical Specifications	Nontechnical Specifications
9	Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus, Cumulus, Stratocumulus, Stratus or pannus.	Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil, either accompanied or not by Cumulonimbus without anvil or fibrous upper part, by Cumulus, Stratocumulus, Stratus or pannus.
/	C_L clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.	Stratocumulus, Stratus, Cumulus, or Cumulonimbus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.

[1] "Bad weather" denotes the conditions which generally exist during precipitation and a short time before and after.

Code Table 9

[WMO Code 1600]

Symbol h=Height above Ground of the Base of the Cloud

Code Figure	Height in Feet	Height in Meters
0	0– 149	0– 49
1	150– 299	50– 99
2	300– 599	100– 199
3	600– 999	200– 299
4	1, 000–1, 999	300– 599
5	2, 000–3, 499	600– 999
6	3, 500–4, 999	1, 000–1, 499
7	5, 000–6, 499	1, 500–1, 999
8	6, 500–7, 999	2, 000–2, 499
9	8, 000 or higher, or no clouds.	2, 500 or higher, or no clouds.

NOTES: (1) The heights (in feet) given in this code table approximately correspond to those given in WMO Code 1600 and to those given in the ninth decade (i.e., code figures 90–99) of WMO Code 1577.

(2) The term "height above ground" is considered as being the height above the official aerodrome elevation or above station level at a non-aerodrome station.

Code Table 10

[WMO Code 0515]

Symbol C_M=Clouds of Genera Ac, As, Ns

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_M clouds	No Altocumulus, Altostratus or Nimbostratus.
1	Altostratus translucidus.	Altostratus, the greater part of which is semitransparent; through this part the sun or moon may be weakly visible as through ground glass.
2	Altostratus opacus or Nimbostratus.	Altostratus, the greate part of which is sufficiently dense to hide the sun or moon, or Nimbostratus.
3	Altocumulus translucidus at a single level.	Altocumulus, the greater part of which is semitransparent, the various elemen of the cloud change only slowly and are all at a single level.
4	Patches (often lenticular) of Altocumulus translucidus, continually changing and occuring at one or more levels.	Patche (often in the form of almonds or fishes) of Altocumulus, the greater part of which is semitransparent; the clouds occur at one or more levels and the elements are continually changing in appearance.
5	Altocumulus translucidus in bands, or one or more layer of Altocumulus translucidus or opacus, progressively invading the sky; these Altocumulus clouds generally thicken as a whole.	Semitransparent Altocumulus in bands, or Altocumulus in one or more fairly continuous layers (semitransparent or opaque), progressively invading the sky; these Altocumulus cloud generally thicken as a whole.

Code Table 11—Continued

Code Figure	Technical Specifications	Nontechnical Specifications
5	reach 45° above the horizon.	growing denser as a whole, but the continuous veil does not reach 45° above the horizon.
6	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole; the continuous veil extends more than 45° above the horizon, without the sky being totally covered.	Cirrus (often in bands converging towards one or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole; the continuous veil extends more than 45° above the horizon, without the sky being totally covered.
7	Cirrostratus covering the whole sky.	Veil of Cirrostratus covering the celestial dome.
8	Cirrostratus not progressively invading the sky and not entirely covering it.	Cirrostratus not progressively invading the sky and not completely covering the celestial dome.
9	Cirrocumulus alone, or Cirrocumulus predominant among the C_H clouds.	Cirrocumulus alone, or Cirrocumulus accompanied by Cirrus or Cirrostratus, or both, but Cirrocumulus is predominant.
10	C_H clouds invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or because of a continuous layer of lower clouds.	Cirrus, Cirrocumulus, and Cirrostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

Code Table 12

[WMO Code 0200]

Symbol **a** = Characteristic of Pressure Tendency During the 3 Hours Preceding the Time of Observation

Code Figure	Description	
0	Increasing, then decreasing; atmospheric pressure the same or higher than 3 hrs. ago.	
1	Increasing, then steady; or increasing, then increasing more slowly	Atmospheric pressure now higher than 3 hours ago.
2	Increasing (steadily or unsteadily)	
3	Decreasing or steady, then increasing; or increasing, then increasing more rapidly	
4	Steady, atmospheric pressure the same as 3 hrs. ago.	
5	Decreasing, then increasing; atmospheric pressure the same or lower than 3 hrs. ago.	
6	Decreasing, then steady; or decreasing then decreasing more slowly	Atmospheric pressure now lower than 3 hours ago.
7	Decreasing (steadily or unsteadily)	
8	Steady or increasing, then decreasing; or decreasing then decreasing more rapidly	
9	Indicator figure	

NOTE: Code figure 9 is used to signify that the amount of pressure tendency is the 24-hour pressure change ($p_{24}p_{24}$) (See Code Table 14).

Code Table 13

Symbol **pp**=Amount of 3-Hour Pressure Tendency

Code Figure	Inches of Mercury	Millibars	Code Figure	Inches of Mercury	Millibars
00	0. 000	0. 0			
02	0. 005	0. 2	52	0. 155	5. 2
03	0. 010	0. 3	54	0. 160	5. 4
05	0. 015	0. 5	56	0. 165	5. 6
07	0. 020	0. 7	58	0. 170	5. 8
08	0. 025	0. 8	59	0. 175	5. 9
10	0. 030	1. 0	61	0. 180	6. 1
12	0. 035	1. 2	63	0. 185	6. 3
14	0. 040	1. 4	64	0. 190	6. 4
15	0. 045	1. 5	66	0. 195	6. 6
17	0. 050	1. 7	68	0. 200	6. 8
19	0. 055	1. 9	69	0. 205	6. 9
20	0. 060	2. 0	71	0. 210	7. 1
22	0. 065	2. 2	73	0. 215	7. 3
24	0. 070	2. 4	75	0. 220	7. 5
25	0. 075	2. 5	76	0. 225	7. 6
27	0. 080	2. 7	78	0. 230	7. 8
29	0. 085	2. 9	80	0. 235	8. 0
30	0. 090	3. 0	81	0. 240	8. 1
32	0. 095	3. 2	83	0. 245	8. 3
34	0. 100	3. 4	85	0. 250	8. 5
36	0. 105	3. 6	86	0. 255	8. 6
37	0. 110	3. 7	88	0. 260	8. 8
39	0. 115	3. 9	90	0. 265	9. 0
41	0. 120	4. 1	91	0. 270	9. 1
42	0. 125	4. 2	93	0. 275	9. 3
44	0. 130	4. 4	95	0. 280	9. 5
46	0. 135	4. 6	97	0. 285	9. 7
47	0. 140	4. 7	98	0. 290	9. 8
49	0. 145	4. 9			
51	0. 150	5. 1			

NOTES:

(A) The three-hour period used in computing the tendency is the full three hours preceding the **actual** time of observation.

(B) When the amount of the pressure tendency equals or exceeds 9.9 mbs., the group **99ppp** will be inserted in the message following the **TdTdapp** group.

Code Table 14

[WMO Code 470]

Symbol $\mathbf{p_{24}p_{24}}$=Amount of Pressure Change at the Station Level During Past 24 Hours

Code Figure	Amount of Pressure Change
00	No change; pressure same as 24 hours ago
01	Pressure has **risen** 0.1 mb
02	" " " 0.2 mb
03	" " " 0.3 mb
04	" " " 0.4 mb
05	" " " 0.5 mb
06	" " " 0.6 mb
07	" " " 0.7 mb
08	" " " 0.8 mb
09	" " " 0.9 mb
10	" " " 1.0 mb
11	" " " 1.1 mb
12	" " " 1.2 mb
etc.	etc.
38	" " " 3.8 mb
39	" " " 3.9 mb
40	" " " 4 mb
41	" " " 5 mb
42	" " " 6 mb
43	" " " 7 mb
44	" " " 8 mb
45	" " " 9 mb
46	" " " 10 mb
47	" " " 11 mb
48	" " " 12 mb
59	" " " 13 mb or more
50	Not used
51	Pressure has **fallen** 0.1 mb
52	" " " 0.2 mb
53	" " " 0.3 mb
54	" " " 0.4 mb
55	" " " 0.5 mb
56	" " " 0.6 mb
57	" " " 0.7 mb
58	" " " 0.8 mb
59	" " " 0.9 mb
60	" " " 1.0 mb
61	" " " 1.1 mb
62	" " " 1.2 mb
etc.	etc.
88	" " " 3.8 mb
89	" " " 3.9 mb
90	" " " 4 mb
91	" " " 5 mb
92	" " " 6 mb
93	" " " 7 mb
94	" " " 8 mb
95	" " " 9 mb

Code Table 14

[WMO Code 470]

Symbol $p_{24}p_{24}$=Amount of Pressure Change at the Station Level During Past 24 Hours

Code Figure	Amount of Pressure Change
00	No change; pressure same as 24 hours ago
01	Pressure has **risen** 0.1 mb
02	" " " 0.2 mb
03	" " " 0.3 mb
04	" " " 0.4 mb
05	" " " 0.5 mb
06	" " " 0.6 mb
07	" " " 0.7 mb
08	" " " 0.8 mb
09	" " " 0.9 mb
10	" " " 1.0 mb
11	" " " 1.1 mb
12	" " " 1.2 mb
etc.	etc.
38	" " " 3.8 mb
39	" " " 3.9 mb
40	" " " 4 mb
41	" " " 5 mb
42	" " " 6 mb
43	" " " 7 mb
44	" " " 8 mb
45	" " " 9 mb
46	" " " 10 mb
47	" " " 11 mb
48	" " " 12 mb
59	" " " 13 mb or more
50	Not used
51	Pressure has **fallen** 0.1 mb
52	" " " 0.2 mb
53	" " " 0.3 mb
54	" " " 0.4 mb
55	" " " 0.5 mb
56	" " " 0.6 mb
57	" " " 0.7 mb
58	" " " 0.8 mb
59	" " " 0.9 mb
60	" " " 1.0 mb
61	" " " 1.1 mb
62	" " " 1.2 mb
etc.	etc.
88	" " " 3.8 mb
89	" " " 3.9 mb
90	" " " 4 mb
91	" " " 5 mb
92	" " " 6 mb
93	" " " 7 mb
94	" " " 8 mb
95	" " " 9 mb
96	Pressure has **fallen** 10 mb
97	" " " 11 mb
98	" " " 12 mb
99	" " " 13 mb or more

Code Table 16

Symbol R_t=Time Precipitation Began or Ended [1]

Code Figure	Time Began or Ended	Code Figure	Time Began or Ended
0	No precipitation.	6	5 to 6 hours ago.
1	Less than 1 hr. ago	7	6 to 12 hours ago.
2	1 to 2 hours ago.	8	More than 12 hours ago.
3	2 to 3 hours ago.		
4	3 to 4 hours ago.	9	Unknown.
5	4 to 5 hours ago.		

[1] In relation to the "official time of observation."
(NOTE: This Code Table is used by the United States and Canada.)

Code Table 18

[WMO Code 541]

Symbol D_L=Direction From Which C_L Clouds Are Moving
Symbol D_M=Direction From Which C_M Clouds Are Moving

Code Figure	Direction
0	Stationary
1	Cloud coming from NE
2	" " " E
3	" " " SE
4	" " " S
5	" " " SW
6	" " " W
7	" " " NW
8	" " " N
9	No definite direction, or unknown

Code Table 19

[WMO Code 0500]

Symbol C=Genus (Type) of Cloud

Code Figure	Type of Cloud	
0	Cirrus	Ci
1	Cirrocumulus	Cc
2	Cirrostratus	Cs
3	Altocumulus	Ac
4	Altostratus	As
5	Nimbostratus	Ns
6	Stratocumulus	Sc
7	Stratus	St
8	Cumulus	Cu
9	Cumulonimbus	Cb
/	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena.	

Code Table 20

[WMO Code 1677]

Symbol h_sh_s=Height of Base of Cloud Layer Whose Type is Indicated by C

Code Figure	Height in Feet	Height in Meters
00	Less than 100	Less than 30.
01	100	30.
02	200	60.
03	300	90.
04	400	120.
05	500	150.
06	600	180.
07	700	210.
08	800	240.
09	900	270.
10	1,000	300.
11	1,100	330.
12	1,200	360.
13	1,300	390.
14	1,400	420.
15	1,500	450.
16	1,600	480.
17	1,700	510.
18	1,800	540.
19	1,900	570.
20	2,000	600.
21	2,100	630.
22	2,200	660.
23	2,300	690.
24	2,400	720.
25	2,500	750.
26	2,600	780.
27	2,700	810.
28	2,800	840.
29	2,900	870.
30	3,000	900.
31	3,100	930.
32	3,200	960.
33	3,300	990.
34	3,400	1,020.
35	3,500	1,050.
36	3,600	1,080.
37	3,700	1,110.
38	3,800	1,140.
39	3,900	1,170.
40	4,000	1,200.
41	4,100	1,230.
42	4,200	1,260.
43	4,300	1,290.
44	4,400	1,320.

Code Table 20—Continued

Code Figure	Height in Feet	Height in Meters
45	4,500	1,350.
46	4,600	1,380.
47	4,700	1,410.
48	4,800	1,440.
49	4,900	1,470.
50	5,000	1,500.
51	Not specified	
52	Not specified	
53	Not specified	
54	Not specified	
55	Not specified	
56	6,000	1,800.
57	7,000	2,100.
58	8,000	2,400.
59	9,000	2,700.
60	10,000	3,000.
61	11,000	3,300.
62	12,000	3,600.
63	13,000	3,900.
64	14,000	4,200.
65	15,000	4,500.
66	16,000	4,800.
67	17,000	5,100.
68	18,000	5,400.
69	19,000	5,700.
70	20,000	6,000.
71	21,000	6,300.
72	22,000	6,600.
73	23,000	6,900.
74	24,000	7,200.
75	25,000	7,500.
76	26,000	7,800.
77	27,000	8,100.
78	28,000	8,400.
79	29,000	8,700.
80	30,000	9,000.
81	35,000	10,500.
82	40,000	12,000.
83	45,000	13,500.
84	50,000	15,000.
85	55,000	16,500.
86	60,000	18,000.
87	65,000	19,500.
88	70,000	21,000.
89	Higher than 70,000	Higher than 21,000.
90	0–149	0–49.
91	150–299	50–99.
92	300–599	100–199.
93	600–999	200–299.

Code Table 14—Continued

Code Figure	Amount of Pressure Change
96	Pressure has fallen 10 mb
97	" " " 11 mb
98	" " " 12 mb
99	" " " 13 mb or more

Code Table 15

Symbol RR=Amount of Precipitation

(In 6-hour period preceding the actual time of observation)

Code Figure	Amount	Code Figure	Amount	Code Figure	Amount
00	Trace [1]	07	.07 inch.	97	.97 inch.
01	.01 inch.	08	.08 inch.	98	.98 inch.
02	.02 inch.	09	.09 inch.	99	.99 inch.
03	.03 inch.	10	.10 inch.	00	1.00.[2]
04	.04 inch.	11	.11 inch.	01	1.01.[2]
05	.05 inch.	etc.	etc.	02	1.02.[2]
06	.06 inch.	96	.96 inch.	etc.	etc.

[1] A **trace** of precipitation is an amount generally considered too small to measure; i.e., less than 0.005 inch.

[2] When the amount of precipitation is 1.00 inch or more, the number of whole inches is reported by a plain language word inserted in the message immediately following the $7RRR_ts$ group.

Code Table 16

Symbol R_t=Time Precipitation Began or Ended [1]

Code Figure	Time Began or Ended	Code Figure	Time Began or Ended
0	No precipitation.	6	5 to 6 hours ago.
1	Less than 1 hr. ago	7	6 to 12 hours ago.
2	1 to 2 hours ago.	8	More than 12 hours ago.
3	2 to 3 hours ago.		
4	3 to 4 hours ago.	9	Unknown.
5	4 to 5 hours ago.		

[1] In relation to the "official time of observation."

(NOTE: This Code Table is used by the United States and Canada.)

Code Table 17

[WMO Code 485]

Symbol s=Total Accumulated Depth of Snow

(On ground at the actual time of observation)

Code Figure	Depth of Snow on Ground	Code Figure	Depth of Snow on Ground
0	None.	5	5 inches.
1	1 inch.	6	6 inches.
2	2 inches.	7	7 inches.
3	3 inches.	8	8 inches or more.
4	4 inches.	9	Less than 0.5 inch.

*NOTE. <0.5 inch of snow and/or ice on ground is considered a TRACE for synoptic coding purposes.

Code Table 18

[WMO Code 541]

Symbol D_L=Direction From Which C_L Clouds Are Moving

Symbol D_M=Direction From Which C_M Clouds Are Moving

Code Figure	Direction
0	Stationary
1	Cloud coming from NE
2	" " " E
3	" " " SE
4	" " " S
5	" " " SW
6	" " " W
7	" " " NW
8	" " " N
9	No definite direction, or unknown

Code Table 19

[WMO Code 0500]

Symbol C=Genus (Type) of Cloud

Code Figure	Type of Cloud	
0	Cirrus	Ci
1	Cirrocumulus	Cc
2	Cirrostratus	Cs
3	Altocumulus	Ac
4	Altostratus	As
5	Nimbostratus	Ns
6	Stratocumulus	Sc
7	Stratus	St
8	Cumulus	Cu
9	Cumulonimbus	Cb
/	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena.	

Code Table 20—Continued

Code Figure	Height in Feet	Height in Meters
94	1,000–1,999	300–599.
95	2,000–3,499	600–999.
96	3,500–4,999	1,000–1,499.
97	5,000–6,499	1,500–1,999.
98	6,500–7,999	2,000–2,499.
99	8,000 or higher, or no clouds.	2,500 or higher, or no clouds.

NOTES.—(A) If the observed height is between two of the reportable heights as given in the table, the code figure for the lower reportable height will be reported when code figures 00 to 89, inclusive, are involved.
(B) The 90-99 decade should **never** be used for aeronautical purposes or in special weather reports from ships.

Code Table 21

[WMO Code 483]

Symbol S_PS_P=Special Phenomena Code, General Description

Code Figure	"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)
	00–09: Ground and Miscellaneous Phenomena
00	Average depth of deepest snowdrifts (in feet). (nn)
01	Depth of newly fallen snow during past 6 hours (in whole inches). (nn)
02	Water equivalent of snow and/or ice on ground (tenths of an inch). (nn)
03	Water equivalent of snow and/or ice on ground (in whole inches). (nn)
04	Total amount of snow and/or ice on ground (in whole inches). (nn)
05	State of ground. (EE)
06	Frost. (tt, zz)
07	Glaze, average rate of accrual per hour (in tenths of an inch). (nn)
08	State of sea, or Period of sea swell. (S_sS_s or K_pK_p)
09	Water temperature in whole degrees (Farenheit or Celsius). (nn)
	10–15: Clouds
10	Direction of clouds from station, or clouds. ((D_sD_s or zz)
11	
12	
13	
14	Nonpersistent contrails; time first observed. (tt)
15	Persistent contrails; time first observed. (tt)

Code Table 21—Continued

Code Figure	"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)
	16–19: Atmospheric Pressure and Fronts
16	Atmospheric pressure reduced to mean sea level, lowest in past 6 hours (in "tens" and "units" of mbs.). (nn)
17	Time of lowest pressure, or Barometric stability. (tt or zz)
18	Time front passed station, or Front. (tt or zz)
19	
	20–29: Wind Data
20	Direction of maximum wind in tens of degrees (dd)
21	Speed of maximum wind. (ff)
22	Speed of peak gusts. (ff)
23	Average speed of prevailing wind during past 6 hours. (ff)
24	Prevailing wind direction during past 6 hours. (dd)
25	Wind direction during past hour. or Wind direction 1 hour ago. (zz or dd)
26	Wind speed during past hour. (zz)
27	Time of highest wind. (tt)
28	Pronounced clockwise (veering) shift in wind direction. (tt, zz)
29	Pronounced counterclockwise (backing) shift in wind direction. (tt, zz)
	30–34: Fog and smoke
30	Fog; direction or variability. (D_sD_s or zz)
31	Fog began. (tt)
32	Fog ended. (tt)
33	Fog bank in distance; direction or variability (D_sD_s or zz)
34	Smoke; direction or variability. (D_sD_s or zz)
	35–39: Blowing Phenomena
35	Blowing dust (or sand), blowing snow. (tt, zz)
36	
37	Drifting dust (or sand), drifting snow. (tt, zz)
38	Dust whirls; time began or variability. (tt or zz)
39	Dust whirls; time ended or variability. (tt or zz)
	40–49: Visibility
40	Visibility; time of change, or variability. (tt or zz)
41	Visibility to NE. (VV)
42	Visibility to E. (VV)

Code Table 21—Continued

Code Figure	"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)
	40–49: Visibility—Continued
43	Visibility to SE. (VV)
44	Visibility to S. (VV)
45	Visibility to SW. (VV)
46	Visibility to W. (VV)
47	Visibility to NW. (VV)
48	Visibility to N. (VV)
49	
	59–79: Unassigned
	80–89: Reserved for National Use
	90–99: Clouds
9	Direction from which C_L, C_M, C_H clouds are moving (D_L, D_M, D_H). To report cloud directions, the Special Phenomena group becomes $99D_LD_MD_H$.

Code Table 22

Symbol s_ps_p=Special Phenomena Table, Detailed Description

Several individual code tables are required to report data for s_ps_p. For ease of identification the individual s_ps_p code tables are considered to be parts of one general s_ps_p code table (No. 22) and they are designated by letter (e.g., 22a, 22b, 22c, etc.). The individual s_ps_p code tables are:

Code Table		Symbol
22a	Units of Specific Value	nn
22b	State of Ground	EE
22c	Time	tt
22d	Variation in Phenomena	zz
22e	State of Sea	S_sS_s
22f	Period of Sea Swell	K_pK_p
22g	Direction from Station	D_sD_s
22h	Wind Speed	ff
22i	Direction of Cloud Movement.	D_L, D_M, and D_H.

Code Table 22a

[WMO Code 468]

Symbol **nn** =Units of Specific Value (00–99)

Code Figure	Value (depending on "general" code figure used)
00	Zero or less than 1 unit.
01	1; 10; 100; or 1,000.
02	2; 20; 200; or 2,000.
Etc.	Etc.
12	12; 120; 1,200; or 12,000.
13	13; 130; 1,300; or 13,000.
Etc.	Etc.
98	98; 980; 9,800; or 98,000.
[1] 99	99 or more; 990 or more; 9,900 or more; 99,000 or more.

[1] When the value to be coded for symbol "nn" is "more than 99, etc." the appropriate number of $9S_pS_pnn$ groups will be used; i.e., in the first group (or groups) 99 will be reported for "nn" and the amount in excess of 100 (or 200, etc., as appropriate) will be reported for "nn" in the last group of the series. For example: 100 inches of snow on ground would be coded 90499 90400; 105 inches, 90499 90405; 210 inches, 90499 90499 90410, etc.

(NOTE: In the example given in footnote 1, immediately above, WMO Region IV has specified that the depth of snow be given in centimeters rather than inches. In this case the United States will continue national custom and report the depth of snow on ground in inches. However, those using reports from other countries should be alert to the possibility that depths of snow on ground may be reported in centimeters.)

Code Table 22b

[WMO Code 0900]

Symbol **E**=State of Ground (0 to 9)
Symbol **EE**=State of Ground (00 to 09)

Code Figure	State of Ground
00	Surface of ground dry (no appreciable amount of dust or loose sand).
01	Surface of ground moist.
02	Surface of ground wet (standing water in small or large pools on surface).
03	Surface of ground frozen.
04	Glaze or ice on ground, but no snow or melting snow.
05	Snow or melting snow (with or without ice) covering less than one-half of ground.
06	Snow or melting snow (with or without ice) covering more than one-half of ground but ground not completely covered.
07	Snow or melting snow (with or without ice) covering ground completely.
08	Loose dry snow, dust or sand, covering more than one-half of ground (but not completely).
09	Loose dry snow, dust or sand covering ground completely.

NOTES

(a) Where dust or sand is reported and the temperature is below 0° C., the word DUST or SAND is added at the end of the message.

(b) The definitions in the code for **E** for numbers 0 to 3 apply to representative bare ground and numbers 4 to 9 to an open representative area.

(c) In all instances the highest code figures applicable will be reported.

Code Table 21—Continued

Code Figure	"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)
	40–49: Visibility—Continued
43	Visibility to SE. (VV)
44	Visibility to S. (VV)
45	Visibility to SW. (VV)
46	Visibility to W. (VV)
47	Visibility to NW. (VV)
48	Visibility to N. (VV)
49	
	59–79: Unassigned
	80–89: Reserved for National Use
	90–99: Clouds
9	Direction from which C_L, C_M, C_H clouds are moving (D_L, D_M, D_H). To report cloud directions, the Special Phenomena group becomes $99D_LD_MD_H$.

Code Table 22

Symbol s_ps_p=Special Phenomena Table, Detailed Description

Several individual code tables are required to report data for s_ps_p. For ease of identification the individual s_ps_p code tables are considered to be parts of one general s_ps_p code table (No. 22) and they are designated by letter (e.g., 22a, 22b, 22c, etc.). The individual s_ps_p code tables are:

Code Table		Symbol
22a	Units of Specific Value	nn
22b	State of Ground	EE
22c	Time	tt
22d	Variation in Phenomena	zz
22e	State of Sea	S_sS_s
22f	Period of Sea Swell	K_pK_p
22g	Direction from Station	D_sD_s
22h	Wind Speed	ff
22i	Direction of Cloud Movement.	D_L, D_M, and D_H.

Code Table 22a

[WMO Code 468]

Symbol nn =Units of Specific Value (00–99)

Code Figure	Value (depending on "general" code figure used)
00	Zero or less than 1 unit.
01	1; 10; 100; or 1,000.
02	2; 20; 200; or 2,000.
Etc.	Etc.
12	12; 120; 1,200; or 12,000.
13	13; 130; 1,300; or 13,000.
Etc.	Etc.
98	98; 980; 9,800; or 98,000.
[1] 99	99 or more; 990 or more; 9,900 or more; 99,000 or more.

[1] When the value to be coded for symbol "nn" is "more than 99, etc." the appropriate number of $9S_pS_pnn$ groups will be used; i.e., in the first group (or groups) 99 will be reported for "nn" and the amount in excess of 100 (or 200, etc., as appropriate) will be reported for "nn" in the last group of the series. For example: 100 inches of snow on ground would be coded 90499 90400; 105 inches, 90499 90405; 210 inches, 90499 90499 90410, etc.

(NOTE: In the example given in footnote 1, immediately above, WMO Region IV has specified that the depth of snow be given in centimeters rather than inches. In this case the United States will continue national custom and report the depth of snow on ground in inches. However, those using reports from other countries should be alert to the possibility that depths of snow on ground may be reported in centimeters.)

Code Table 22b

[WMO Code 0900]

Symbol E=State of Ground (0 to 9)
Symbol EE=State of Ground (00 to 09)

Code Figure	State of Ground
00	Surface of ground dry (no appreciable amount of dust or loose sand).
01	Surface of ground moist.
02	Surface of ground wet (standing water in small or large pools on surface).
03	Surface of ground frozen.
04	Glaze or ice on ground, but no snow or melting snow.
05	Snow or melting snow (with or without ice) covering less than one-half of ground.
06	Snow or melting snow (with or without ice) covering more than one-half of ground but ground not completely covered.
07	Snow or melting snow (with or without ice) covering ground completely.
08	Loose dry snow, dust or sand, covering more than one-half of ground (but not completely).
09	Loose dry snow, dust or sand covering ground completely.

NOTES

(a) Where dust or sand is reported and the temperature is below 0° C., the word DUST or SAND is added at the end of the message.

(b) The definitions in the code for E for numbers 0 to 3 apply to representative bare ground and numbers 4 to 9 to an open representative area.

(c) In all instances the highest code figures applicable will be reported.

Code Table 20—Continued

Code Figure	Height in Feet	Height in Meters
94	1,000–1,999	300–599.
95	2,000–3,499	600–999.
96	3,500–4,999	1,000–1,499.
97	5,000–6,499	1,500–1,999.
98	6,500–7,999	2,000–2,499.
99	8,000 or higher, or no clouds.	2,500 or higher, or no clouds.

NOTES.—(A) If the observed height is between two of the reportable heights as given in the table, the code figure for the lower reportable height will be reported when code figures 00 to 89, inclusive, are involved.

(B) The 90-99 decade should **never** be used for aeronautical purposes or in special weather reports from ships.

Code Table 21

[WMO Code 483]

Symbol S_PS_P=Special Phenomena Code, General Description

Code Figure	"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)
	00–09: Ground and Miscellaneous Phenomena
00	Average depth of deepest snowdrifts (in feet). (nn)
01	Depth of newly fallen snow during past 6 hours (in whole inches). (nn)
02	Water equivalent of snow and/or ice on ground (tenths of an inch). (nn)
03	Water equivalent of snow and/or ice on ground (in whole inches). (nn)
04	Total amount of snow and/or ice on ground (in whole inches). (nn)
05	State of ground. (EE)
06	Frost. (tt, zz)
07	Glaze, average rate of accrual per hour (in tenths of an inch). (nn)
08	State of sea, or Period of sea swell. (S_sS_s or K_pK_p)
09	Water temperature in whole degrees (Farenheit or Celsius). (nn)
	10–15: Clouds
10	Direction of clouds from station, or clouds. ((D_sD_s or zz)
11	
12	
13	
14	Nonpersistent contrails; time first observed. (tt)
15	Persistent contrails; time first observed. (tt)

Code Table 21—Continued

Code Figure	"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)
	16–19: Atmospheric Pressure and Fronts
16	Atmospheric pressure reduced to mean sea level, lowest in past 6 hours (in "tens" and "units" of mbs.). (nn)
17	Time of lowest pressure, or Barometric stability. (tt or zz)
18	Time front passed station, or Front. (tt or zz)
19	
	20–29: Wind Data
20	Direction of maximum wind in tens of degrees (dd)
21	Speed of maximum wind. (ff)
22	Speed of peak gusts. (ff)
23	Average speed of prevailing wind during past 6 hours. (ff)
24	Prevailing wind direction during past 6 hours. (dd)
25	Wind direction during past hour, or Wind direction 1 hour ago. (zz or dd)
26	Wind speed during past hour. (zz)
27	Time of highest wind. (tt)
28	Pronounced clockwise (veering) shift in wind direction. (tt, zz)
29	Pronounced counterclockwise (backing) shift in wind direction. (tt, zz)
	30–34: Fog and smoke
30	Fog; direction or variability. (D_sD_s or zz)
31	Fog began. (tt)
32	Fog ended. (tt)
33	Fog bank in distance; direction or variability (D_sD_s or zz)
34	Smoke; direction or variability. (D_sD_s or zz)
	35–39: Blowing Phenomena
35	Blowing dust (or sand), blowing snow. (tt, zz)
36	
37	Drifting dust (or sand), drifting snow. (tt, zz)
38	Dust whirls; time began or variability. (tt or zz)
39	Dust whirls; time ended or variability. (tt or zz)
	40–49: Visibility
40	Visibility; time of change, or variability. (tt or zz)
41	Visibility to NE. (VV)
42	Visibility to E. (VV)

Code Table 22c

[WMO Code 487]

Symbol tt=Units and Tenths of Hours Before Observation (00–75)

Code Figure	Hours and minutes **before** observation	Code Figure	Hours and minutes **before** observation
00	At observation.	43	4 hours 18 minutes.
01	0 hour 6 minutes.	44	4 " 24 "
02	0 " 12 "	45	4 " 30 "
03	0 " 18 "	46	4 " 36 "
04	0 " 24 "	47	4 " 42 "
05	0 " 30 "	48	4 " 48 "
06	0 " 36 "	49	4 " 54 "
07	0 " 42 "	50	5 hours 0 "
08	0 " 48 "	51	5 " 6 "
09	0 " 54 "	52	5 " 12 "
10	1 hour 0 "	53	5 " 18 "
11	1 " 6 "	54	5 " 24 "
12	1 " 12 "	55	5 " 30 "
13	1 " 18 "	56	5 " 36 "
14	1 " 24 "	57	5 " 42 "
15	1 " 30 "	58	5 " 48 "
16	1 " 36 "	59	5 " 54 "
17	1 " 42 "	60	6 hours 0 "
18	1 " 48 "	61	6 to 7 hours.
19	1 " 54 "	62	7 to 8 "
20	2 hours 0 "	63	8 to 9 "
21	2 " 6 "	64	9 to 10 "
22	2 " 12 "	65	10 to 11 "
23	2 " 18 "	66	11 to 12 "
24	2 " 24 "	67	12 to 18 "
25	2 " 30 "	68	More than 18 hours.
26	2 " 36 "		
27	2 " 42 "	69	Time unknown.
28	2 " 48 "	70	Began during observation.
29	2 " 54 "		
30	3 hours 0 "	71	Ended during observation.
31	3 " 6 "		
32	3 " 12 "	72	Began and ended during observation.
33	3 " 18 "		
34	3 " 24 "		
35	3 " 30 "	73	Changed considerably during observation.
36	3 " 36 "		
37	3 " 42 "		
38	3 " 48 "	74	Began after observation.
39	3 " 54 "		
40	4 hours 0 "	75	Ended after observation.
41	4 " 6 "		
42	4 " 12 "		

NOTE.—Code figures 00 to 69, inclusive, refer to the **STANDARD** time of observation. Code figures 70 to 75, inclusive, refer to the **ACTUAL** time the element is observed.

Code Table 22d

[WMO Code 495]

Symbol zz=Variation in Phenomena

Code Figure	Description
70	Began while observation was being taken.[1]
71	Ended while observation was being taken.[1]
72	Began and ended while observation was being taken.[1]
73	Changed considerably while observation was being taken.[1]
74	Began **after** observation was taken.[1]
75	Ended **after** observation was taken.[1]
76	At station.
77	At station, but not in distance.
78	In all directions.
79	In all directions, but not at station.
80	Approaching station.
81	Receding from station.
82	Passing station in distance.
83	Seen in distance.
84	Reported in neighborhood, but not at station.
85	Aloft, but not near ground.
86	Near ground, but not aloft.
87	Occasional; occasionally.
88	Intermittent; intermittently.
89	Frequent; frequently; at frequent intervals.
90	Steady; steady in intensity; steadily; no appreciable change.
91	Increasing; increasing in intensity; has increased.
92	Decreasing; decreasing in intensity; has decreased.
93	Fluctuating; variable.
94	Continuous; continuously.
95	Very light; very weak; greatly below normal; very thin; very poor.
96	Light; weak; below normal; thin; poor.
97	Moderate; normal; average thickness; fair; gradually.
98	Heavy; severe; thick; above normal; good; suddenly.
99	Very heavy; killing; very severe; dense; greatly above normal; very thick; very good.

[1] Code figures 70 to 75 refer to the **ACTUAL** time the element is observed.

Code Table 22e

[WMO Code 3700]

Symbol S=State of Sea (0 to 9)
Symbol S_sS_s=State of Sea (00 to 09)

Code Figure	Description of sea	Height of waves in feet	Height of waves in meters
00	Calm (glassy)	0	0.
01	Calm (rippled)	0–⅓	0–0.1.
02	Smooth (wavelets)	⅓–1⅔	0.1–0.5.
03	Slight	1⅔–4	0.5–1.25.
04	Moderate	4–8	1.25–2.5.
05	Rough	8–13	2.5–4.
06	Very rough	13–20	4–6.
07	High	20–30	6–9.
08	Very high	30–45	9–14.
09	Phenomenal	Over 45	Over 14.

NOTES

(1) The average wave height as obtained from the larger well-formed waves of the wave system being observed is reported.

(2) If an exact boundary height could be reported by two code figures the lower code figure will be reported; e.g., a height of 13 feet would be reported by code figure 5 or 05.

Code Table 22f

[WMO Code 461]

Symbol K_pK_p=Period of Sea Swell (in seconds)

Code Figure	Period	Code Figure	Period
[1] 11	1 second.	14	4 seconds.
12	2 seconds.	Etc.	Etc.
13	3 seconds.		

[1] The code figure gives the actual number of seconds plus ten.

Code Table 22g

[WMO Code 442]

Symbol D_sD_s=Direction From Station (00–39)

Code Figure	Direction
00	At station.
02	NNE.
04	NE.
06	ENE.
08	E.
10	ESE.
12	SE.
14	SSE.
16	S.
18	SSW.
20	SW.
22	WSW.
24	W.
26	WNW.
28	NW.

Code Table 22g—Continued

Code Figure	Description
30	NNW.
32	N.
33	Variable.
34	Unknown.
35	In several directions.
36	In several directions, but not at station.
37	Over nearby water area.
38	Over nearby valleys.
39	Over nearby hills or mountains.

Code Table 22h

Symbol ff=Wind Speed in Knots

Code Figure	Wind Speed	Code Figure	Wind Speed
00	Calm; or unknown.	97	97 knots.
		98	98 knots.
01	1 knot.	99	99 knots; or 100 knots.
02	2 knots.		
03	3 knots.	01	101 knots.[1]
04	4 knots.	02	102 knots.[1]
Etc.	Etc.	03	103 knots.[1]
95	95 knots.	04	104 knots.[1]
96	96 knots.	Etc.	Etc.

[1] When the wind speed is greater than 100 knots TWO Special Phenomena groups are included in the message and the same code figure is reported for "S_PS_P" in both groups. In the first group "99" is reported for "S_pS_p" and in the second group the speed in EXCESS of 100 knots is reported for "S_pS_p". For example: In reporting a maximum wind of 124 knots, the groups are coded "92199 92124."

Code Table 22i

[WMO Code 431]

Symbol D_H=Direction **From** Which C_H Type Clouds Are Moving
Symbol D_L=Direction **From** Which C_L Type Clouds Are Moving
Symbol D_M=Direction **From** Which C_M Type Clouds Are Moving

Code Figure	Direction	Code Figure	Direction
0	Calm.	5	Southwest.
1	Northeast.	6	West.
2	East.	7	Northwest.
3	Southeast.	8	North.
4	South.	9	Unknown.

Code Table 22e

[WMO Code 3700]

Symbol S=State of Sea (0 to 9)
Symbol S_sS_s=State of Sea (00 to 09)

Code Figure	Description of sea	Height of waves in feet	Height of waves in meters
00	Calm (glassy)	0	0.
01	Calm (rippled)	0–⅛	0–0.1.
02	Smooth (wavelets)	⅛–1⅜	0.1–0.5.
03	Slight	1⅜–4	0.5–1.25.
04	Moderate	4–8	1.25–2.5.
05	Rough	8–13	2.5–4.
06	Very rough	13–20	4–6.
07	High	20–30	6–9.
08	Very high	30–45	9–14.
09	Phenomenal	Over 45	Over 14.

NOTES

(1) The average wave height as obtained from the larger well-formed waves of the wave system being observed is reported.

(2) If an exact boundary height could be reported by two code figures the lower code figure will be reported; e.g., a height of 13 feet would be reported by code figure 5 or 05.

Code Table 22f

[WMO Code 461]

Symbol K_pK_p=Period of Sea Swell (in seconds)

Code Figure	Period	Code Figure	Period
[1] 11	1 second.	14	4 seconds.
12	2 seconds.	Etc.	Etc.
13	3 seconds.		

[1] The code figure gives the actual number of seconds plus ten.

Code Table 22g

[WMO Code 442]

Symbol D_sD_s=Direction From Station (00–39)

Code Figure	Direction
00	At station.
02	NNE.
04	NE.
06	ENE.
08	E.
10	ESE.
12	SE.
14	SSE.
16	S.
18	SSW.
20	SW.
22	WSW.
24	W.
26	WNW.
28	NW.

Code Table 22g—Continued

Code Figure	Description
30	NNW.
32	N.
33	Variable.
34	Unknown.
35	In several directions.
36	In several directions, but not at station.
37	Over nearby water area.
38	Over nearby valleys.
39	Over nearby hills or mountains.

Code Table 22h

Symbol ff=Wind Speed in Knots

Code Figure	Wind Speed	Code Figure	Wind Speed
00	Calm; or unknown.	97	97 knots.
		98	98 knots.
01	1 knot.	99	99 knots; or 100 knots.
02	2 knots.		
03	3 knots.	01	101 knots.[1]
04	4 knots.	02	102 knots.[1]
Etc.	Etc.	03	103 knots.[1]
95	95 knots.	04	104 knots.[1]
96	96 knots.	Etc.	Etc.

[1] When the wind speed is greater than 100 knots TWO Special Phenomena groups are included in the message and the same code figure is reported for "S_PS_P" in both groups. In the first group "99" is reported for "S_pS_p" and in the second group the speed in EXCESS of 100 knots is reported for "S_pS_p". For example: In reporting a maximum wind of 124 knots, the groups are coded "92199 92124."

Code Table 22i

[WMO Code 431]

Symbol D_H=Direction **From** Which C_H Type Clouds Are Moving
Symbol D_L=Direction **From** Which C_L Type Clouds Are Moving
Symbol D_M=Direction **From** Which C_M Type Clouds Are Moving

Code Figure	Direction	Code Figure	Direction
0	Calm.	5	Southwest.
1	Northeast.	6	West.
2	East.	7	Northwest.
3	Southeast.	8	North.
4	South.	9	Unknown.

Code Table 22c

[WMO Code 487]

Symbol tt=Units and Tenths of Hours Before Observation (00–75)

Code Figure	Hours and minutes **before** observation	Code Figure	Hours and minutes **before** observation
00	At observation.	43	4 hours 18 minutes.
01	0 hour 6 minutes.	44	4 " 24 "
02	0 " 12 "	45	4 " 30 "
03	0 " 18 "	46	4 " 36 "
04	0 " 24 "	47	4 " 42 "
05	0 " 30 "	48	4 " 48 "
06	0 " 36 "	49	4 " 54 "
07	0 " 42 "	50	5 hours 0 "
08	0 " 48 "	51	5 " 6 "
09	0 " 54 "	52	5 " 12 "
10	1 hour 0 "	53	5 " 18 "
11	1 " 6 "	54	5 " 24 "
12	1 " 12 "	55	5 " 30 "
13	1 " 18 "	56	5 " 36 "
14	1 " 24 "	57	5 " 42 "
15	1 " 30 "	58	5 " 48 "
16	1 " 36 "	59	5 " 54 "
17	1 " 42 "	60	6 hours 0 "
18	1 " 48 "	61	6 to 7 hours.
19	1 " 54 "	62	7 to 8 "
20	2 hours 0 "	63	8 to 9 "
21	2 " 6 "	64	9 to 10 "
22	2 " 12 "	65	10 to 11 "
23	2 " 18 "	66	11 to 12 "
24	2 " 24 "	67	12 to 18 "
25	2 " 30 "	68	More than 18 hours.
26	2 " 36 "	69	Time unknown.
27	2 " 42 "	70	Began during observation.
28	2 " 48 "	71	Ended during observation.
29	2 " 54 "	72	Began and ended during observation.
30	3 hours 0 "	73	Changed considerably during observation.
31	3 " 6 "	74	Began after observation.
32	3 " 12 "	75	Ended after observation.
33	3 " 18 "		
34	3 " 24 "		
35	3 " 30 "		
36	3 " 36 "		
37	3 " 42 "		
38	3 " 48 "		
39	3 " 54 "		
40	4 hours 0 "		
41	4 " 6 "		
42	4 " 12 "		

NOTE.—Code figures 00 to 69, inclusive, refer to the **STANDARD** time of observation. Code figures 70 to 75, inclusive, refer to the **ACTUAL** time the element is observed.

Code Table 22d

[WMO Code 495]

Symbol zz=Variation in Phenomena

Code Figure	Description
70	Began while observation was being taken.[1]
71	Ended while observation was being taken.[1]
72	Began and ended while observation was being taken.[1]
73	Changed considerably while observation was being taken.[1]
74	Began **after** observation was taken.[1]
75	Ended **after** observation was taken.[1]
76	At station.
77	At station, but not in distance.
78	In all directions.
79	In all directions, but not at station.
80	Approaching station.
81	Receding from station.
82	Passing station in distance.
83	Seen in distance.
84	Reported in neighborhood, but not at station.
85	Aloft, but not near ground.
86	Near ground, but not aloft.
87	Occasional; occasionally.
88	Intermittent; intermittently.
89	Frequent; frequently; at frequent intervals.
90	Steady; steady in intensity; steadily; no appreciable change.
91	Increasing; increasing in intensity; has increased.
92	Decreasing; decreasing in intensity; has decreased.
93	Fluctuating; variable.
94	Continuous; continuously.
95	Very light; very weak; greatly below normal; very thin; very poor.
96	Light; weak; below normal; thin; poor.
97	Moderate; normal; average thickness; fair; gradually.
98	Heavy; severe; thick; above normal; good; suddenly.
99	Very heavy; killing; very severe; dense; greatly above normal; very thick; very good.

[1] Code figures 70 to 75 refer to the **ACTUAL** time the element is observed.

Code Table 23

[WMO Code 0885]

Symbol $d_w d_w$ = True Direction **from** which Swell Waves Come, in Tens of Degrees

Code Figure	Direction	Code Figure	Direction
00	Calm (no waves).	20	195°–204°.
01	5°–14°.	21	205°–214°.
02	15°–24°.	22	215°–224°.
03	25°–34°.	23	225°–234°.
04	35°–44°.	24	235°–244°.
05	45°–54°.	25	245°–254°.
06	55°–64°.	26	255°–264°.
07	65°–74°.	27	265°–274°.
08	75°–84°.	28	275°–284°.
09	85°–94°.	29	285°–294°.
10	95°–104°.	30	295°–304°.
11	105°–114°.	31	305°–314°.
12	115°–124°.	32	315°–324°.
13	125°–134°.	33	325°–334°.
14	135°–144°.	34	335°–344°.
15	145°–154°.	35	345°–354°.
16	155°–164°.	36	355°–4°.
17	165°–174°.	98	Waves confused, direction indeterminate.
18	175°–184°.		
19	185°–194°.		

Code Table 24

[WMO Code 3155]

Symbol P_w=Period of the Swell Waves

Code Figure	Period
0	10 seconds.
1	11 seconds.
2	12 seconds.
3	13 seconds.
4	14 seconds or more.
5	5 seconds or less.
6	6 seconds.
7	7 seconds.
8	8 seconds.
9	9 seconds.
10	Calm or period not determined.

WMO Code Table 0663

Symbol c_2=Description of Kind of Ice

Code Figure	Specifications
0	No ice (0 may be used to report ice blink and then a direction must be reported).
1	New ice.
2	Fast ice.
3	Pack ice/drift ice.
4	Packed (compact) slush or sludge.
5	Shore lead.
6	Heavy fast ice.
7	Heavy pack ice/drift ice.
8	Hummocked ice.
9	Icebergs.*

*Icebergs can also be reported in plain language.

WMO Code Table 2100

Symbol **K**=Effect of the Ice on Navigation

Code Figure	Navigation Conditions
0	Navigation unobstructed.
1	Navigation unobstructed for steamers, difficult for sailing ships.
2	Navigation difficult for low-powered steamers, closed to sailing ships.
3	Navigation possible only for powerful steamers.
4	Navigation possible only for steamers constructed to withstand ice pressure.
5	Navigation possible with the assistance of icebreakers.
6	Channel open in solid ice.
7	Navigation temporarily closed.
8	Navigation closed.
9	Navigation conditions unknown (e.g., owing to bad weather).

Conversion Table B

Wind Direction

[Degrees to 16 Compass Points]

Degrees	Compass Point	Degrees	Compass Point
349°– 11°	N	169°–191°	S
12°– 33°	NNE	192°–213°	SSW
34°– 56°	NE	214°–236°	SW
57°– 78°	ENE	237°–258°	WSW
79°–101°	E	259°–281°	W
102°–123°	ESE	282°–303°	WNW
124°–146°	SE	304°–326°	NW
147°–168°	SSE	327°–348°	NNW

Conversion Table C

Meters Per Second to Knots

Mps	0	1	2	3	4	5	6	7	8	9
	Knots	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*
0	-------	1. 9	3. 9	5. 8	7. 8	9. 7	11. 7	13. 6	15. 5	17. 5
10	19. 4	21. 4	23. 3	25. 3	27. 2	29. 1	31. 1	33. 0	35. 0	36. 9
20	38. 9	40. 8	42. 7	44. 7	46. 6	48. 6	50. 5	52. 4	54. 4	56. 3
30	58. 3	60. 2	62. 2	64. 1	66. 0	68. 0	69. 9	71. 9	73. 8	75. 8
40	77. 7	79. 6	81. 6	83. 5	85. 5	87. 4	89. 4	91. 3	93. 2	95. 2
50	97. 1	99. 1	101. 0	103. 0	104. 9	106. 8	108. 8	110. 7	112. 7	114. 6
60	116. 6	118. 5	120. 4	122. 4	124. 3	126. 3	128. 2	130. 1	132. 1	134. 0
70	136. 0	137. 9	139. 9	141. 8	143. 7	145. 7	147. 6	149. 6	151. 5	153. 5
80	155. 4	157. 3	159. 3	161. 2	163. 2	165. 1	167. 1	169. 0	170. 9	172. 9
90	174. 8	176. 8	178. 7	180. 7	182. 6	184. 5	186. 5	188. 4	190. 4	192. 3
100	194. 3	-------	-------	-------	-------	-------	-------	-------	-------	-------

Conversion Table D

Knots to Meters per Second

Knots	0	1	2	3	4	5	6	7	8	9
	Mps	*Mps*	*Mps*	*Mps*	*Mps*	*Mps*	*Mps*	*Mps*	*Mps*	*Mps*
0	-------	0. 5	1. 0	1. 5	2. 1	2. 6	3. 1	3. 6	4. 1	4. 6
10	5. 1	5. 7	6. 2	6. 7	7. 2	7. 7	8. 2	8. 8	9. 3	9. 8
20	10. 3	10. 8	11. 3	11. 8	12. 4	12. 9	13. 4	13. 9	14. 4	14. 9
30	15. 4	16. 0	16. 5	17. 0	17. 5	18. 0	18. 5	19. 0	19. 6	20. 1
40	20. 6	21. 1	21. 6	22. 1	22. 7	23. 2	23. 7	24. 2	24. 7	25. 2
50	25. 7	26. 3	26. 8	27. 3	27. 8	28. 3	28. 8	29. 3	29. 9	30. 4
60	30. 9	31. 4	31. 9	32. 4	32. 9	33. 5	34. 0	34. 5	35. 0	35. 5
70	36. 0	36. 6	37. 1	37. 6	38. 1	38. 6	39. 1	39. 6	40. 2	40. 7
80	41. 2	41. 7	42. 2	42. 7	43. 2	43. 8	44. 3	44. 8	45. 3	45. 8
90	46. 3	46. 8	47. 4	47. 9	48. 4	48. 9	49. 4	49. 9	50. 4	51. 0
100	51. 5	52. 0	52. 5	53. 0	53. 5	54. 1	54. 6	55. 1	55. 6	56. 1

WMO Code Table 0700

Symbol D_s=Ship's Course (true) Made Good During the 3 Hours Preceding the Time of Observation

Code Figure	Direction	Code Figure	Direction
0	Stationary.	5	Southwest.
1	Northeast.	6	West.
2	East.	7	Northwest.
3	Southeast.	8	North.
4	South.	9	Unknown.

WMO Code Table 0739

Symbol D_i=Bearing of the Ice Edge

Code Figure	Specifications
0	No ice edge can be stated.
1	Ice edge towards NE.
2	Ice edge towards E.
3	Ice edge towards SE.
4	Ice edge towards S.
5	Ice edge towards SW.
6	Ice edge towards W.
7	Ice edge towards NW.
8	Ice edge towards N.
9	Ice edge in several directions.

WMO Code Table 1000

Symbol **e**=Orientation of the Ice Edge

Code Figure	Orientation
0	Orientation of ice edge impossible to estimate—ship outside the ice.
1	Ice edge lying in a direction NE to SW with ice situated to the NW.
2	Ice edge lying in a direction E to W with ice situated to the N.
3	Ice edge lying in a direction SE to NW with ice situated to the NE.
4	Ice edge lying in a direction S to N with ice situated to the E.
5	Ice edge lying in a direction SW to NE with ice situated to the SE.
6	Ice edge lying in a direction W to E with ice situated to the S.
7	Ice edge lying in a direction NW to SE with ice situated to the SW.
8	Ice edge lying in a direction N to S with ice situated to the W.
9	Orientation of ice edge impossible to estimate—ship inside the ice.

WMO Code Table 3600

Symbol **r**=Distance of Ice Edge from Reporting Ship

Code Figure	Miles	Kilometers
0	Up to 1 mile	Up to 2 kilometers.
1	1–2 miles	2–4 kilometers.
2	2–4 miles	4–7 kilometers.
3	4–6 miles	7–11 kilometers.
4	6–8 miles	11–15 kilometers.
5	8–12 miles	15–22 kilometers.
6	12–16 miles	22–30 kilometers.
7	16–20 miles	30–37 kilometers.
8	More than 20 miles.	More than 37 kilometers.
9	Unspecified, or no observation.	Unspecified, or no observation.

NOTE: The exact bounding distance is to be assigned to the lower code figure in each case; e.g., a distance of 8 miles or 15 kilometers is coded as 4.

CHAPTER D4. WMO CODE TABLES

1 General

1.1 The tables of specifications required by the forms of messages given in PART B of this Handbook are given in PART C where they are numbered consecutively in the order in which they appear in the forms of messages given in PART B. PART C contains all of the Code Tables required by United States stations in WMO Regions IV and V.

1.2 Chapter D4 contains additional tables of specifications required to decode reports that might be received from other countries. The tables of specifications in this Chapter are identified by their WMO numbers and are referred to as WMO Code Tables. The WMO Code Tables appear in their numerical order.

1.3 The Code Tables given in PART C are **not repeated** in Chapter D4; therefore, in order to decode reports given in the forms of messages in PART D it will be necessary to refer to **both** PART C and Chapter D4.

WMO Code Table 0264

Symbol a_4=Indicator Giving the Standard Isobaric Surface for which the Altitude is Reported.

Code Figure	Standard Isobaric Surface
0	1000 mb surface.
1	850 mb surface.
2	700 mb surface.

WMO Code Table 0500

Symbol CC=Genus of Cloud

Code Letters	Type of Cloud	Code Figures
CI	Cirrus	0
CC	Cirrocumulus	1
CS	Cirrostratus	2
AC	Altocumulus	3
AS	Altostratus	4
NS	Nimbostratus	5
SC	Stratocumulus	6
ST	Stratus	7
CU	Cumulus	8
CB	Cumulonimbus	9
//	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena.	/

WMO Code Table 0663

Symbol c_2=Description of Kind of Ice

Code Figure	Specifications
0	No ice (0 may be used to report ice blink and then a direction must be reported).
1	New ice.
2	Fast ice.
3	Pack ice/drift ice.
4	Packed (compact) slush or sludge.
5	Shore lead.
6	Heavy fast ice.
7	Heavy pack ice/drift ice.
8	Hummocked ice.
9	Icebergs.*

*Icebergs can also be reported in plain language.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
W345

March 6, 1978

TO : Listed Below

FROM: James E. McDonell
Chief, Meteorological Techniques Br/AD/NMC

SUBJ: New Data Format for "Bogus" Reports (Type 551) Office Note 124 in 'NWS.NMC.PROD.SFCBOG.TxxZ.LATEST'

In order to streamline the method of utilizing the NESS moisture estimates in our operations, an addition to Table SM.8a is being adopted. By storing the NESS moisture estimate (which is simply a number 1-10 at present), the procedures for utilizing them in the global analysis pre-processor (GLAPP) and the LFM moisture processor (LFMRH) can be greatly simplified. The necessary addition to O. N. 124 is given below:

TABLE SM.8a	
Code Figure	Specification
95	Moisture estimate by category ..... LLNNN

Definitions

LL Level indicator: 97 = station level (surface)
NNN Category number (integer)

In order to implement the change it would be highly desirable for GLAPP (Rasch), LFMRH (Costello) and LISTSFC2 (Fleming) to be able to accomodate both the current method and the proposed method equally. The target date for introduction of the new method is April 19, 1978.

Distribution: Mr. Costello Mr. Fleming Mr. Rasch W32(5) W33(2)
Mr. Howcroft Mr. Shimomura Ms. Loman Mr. Fuller
Mr. Irwin D52 Mr. Doty (D523) Mr. Koffler (S132)
NCAR (Jenne) NHC (Zimmer)